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Construction Methods

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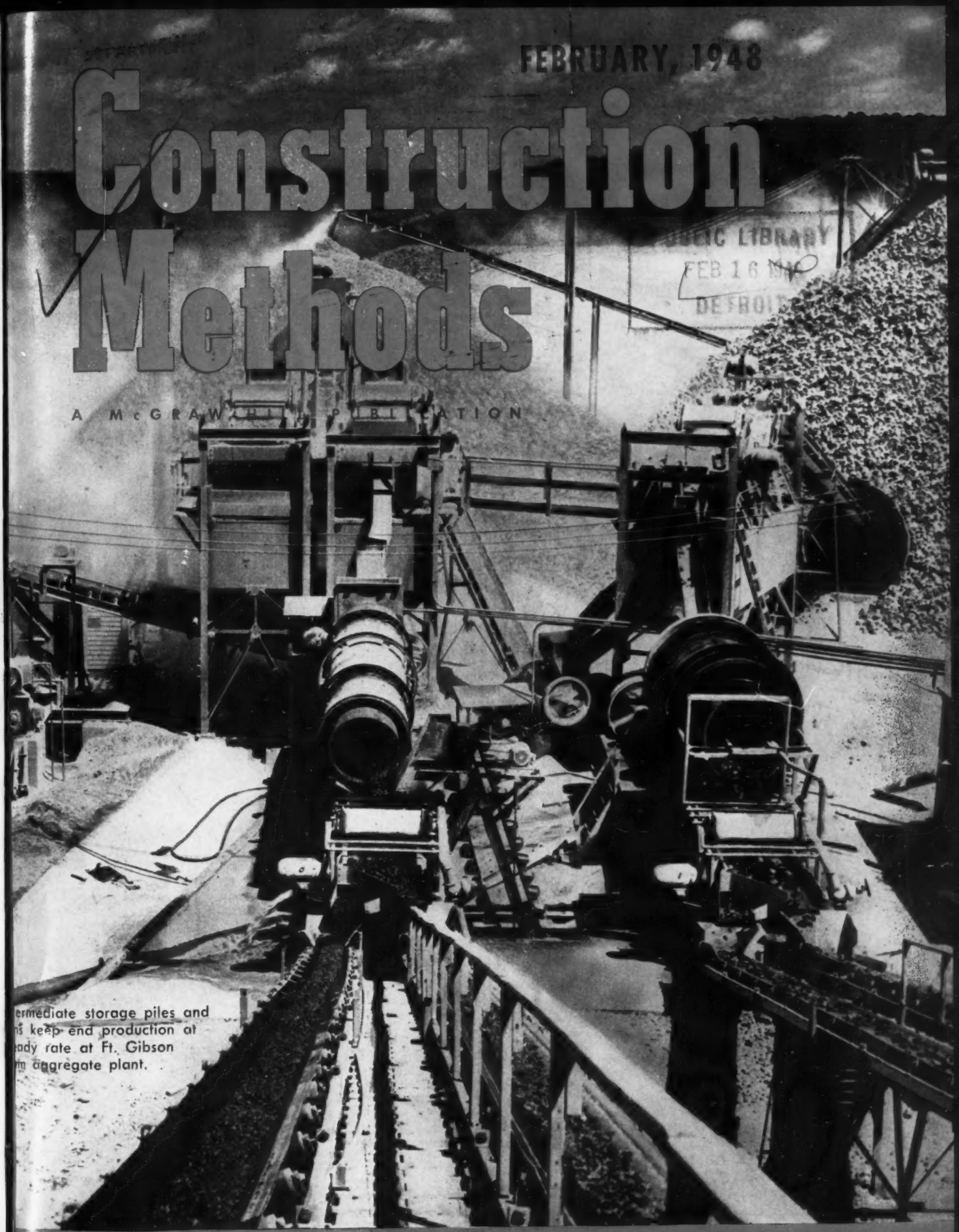

ermediate storage piles and
s keep end production at
ady rate at Ft. Gibson
m aggregate plant.

Ft. Gibson Dam Aggregate Plant Designed for Continuous Flow • Two Pair New Shoes Inserted in Williamsburg Bridge • Pre-Assembly Construction Methods on Florida Housing Project • Concrete Pumped Into High Sliding Forms on Coal Bins • Rigid-Frame Church Arches Prefabricated by Welding

Today's building codes need revision because of Hi-Bond Reinforcing Bars

Present building codes say hooks must be used to anchor reinforcing bars. But these codes were written *before* engineering tests proved that high bond strength makes hooks unnecessary . . . *before* Inland developed Hi-Bond, whose deep reversed double helical ribs provide greater mechanical grip.

Hi-Bond anchors firmly . . . making possible greater use of the steel's potential strength. These bars also make it possible to take advantage of the higher compressive strength of present-day concrete. Because of Hi-Bond, it is possible to build more economical and more efficient structures using less steel and less concrete. Since demand for Hi-Bond greatly exceeds supply, we have licensed other steel companies to make this superior bar. Write for catalog. INLAND STEEL CO., 38 S. Dearborn St., Chicago, Illinois. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, and St. Paul.

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Construction Methods

WALDO G. BOWMAN, *Editor*

THE CONSTRUCTION MAGAZINE WITH PICTURE POWER

Established 1919

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Volume 30 **FEBRUARY 1948** Number 2

CUTS AND FILLS

MILLIONS AND BILLIONS of yards of earth and rock were tossed around with nonchalant ease at the American Society of Civil Engineers meetings in New York last month when Col. James Stratton and his staff revealed studies of deepening the Panama Canal to sea level in a one-stage operation. Total excavation will run about 1 billion 100 million cubic yards, some 320,000,000 of it wet. Over 1 million yards of concrete will go into tide control works. Estimated costs are $2,500,000,000.

ALL OF WHICH adds up to one whale of a job for the construction industry. Single-stage operations were adopted when the dredging fraternity proved it could build dredges that can dig 145 ft. below water level by submitting actual designs for hydraulic, chain bucket and dipper dredges, the latter good for only 95-ft. depth.

THE TENTATIVE suction dredge carries a booster pump mounted on flotation tanks above the cutter head, and the long spuds are stiffened with knee braces beneath the hull. Two-yard buckets operating at 15½ buckets per min. are suggested for the chain bucket dredge. The dipper dredge will sport a 25-yd. bucket. All disposal will be by barge in Gatun Lake.

WHILE the Army Engineers have outlined a sound construction procedure and designed equipment to go with it, all for cost-estimating purposes and to prove the project practicable, they frankly expect the construction industry to come up with something new in earthmoving. With a billion yards to play with, we predict startling developments when the job gets going.

AGGREGATE PRODUCTION is undergoing a change from commercial plants to job plants, both stationary and portable. Increasing freight rates on bulk commodities are mostly responsible, but more strict specifications are also a factor. Manufactured sand is becoming more common, for, in accelerated freezing and thawing tests, it stands up better with coarse sizes made from the same rock than does most natural sand.

BECAUSE of the growing importance of on-the-job production of aggregates, we present in detail in this issue the splendid plant set up at Fort Gibson Dam. This article, supplementing the Fall River Dam plant published last July, and the Allatoona Dam plant to be covered next month, gives contractors a line on latest developments in large-scale aggregate production. Articles on portable plants will follow later.

THE NEED for a big, substantial highway program is vividly shown by increasing maintenance expenditures, now approaching a billion dollars per year. If we don't spend money for highway construction, we'll have to spend it anyway for maintaining and patching up our inadequate, worn out, dangerous present highway system.

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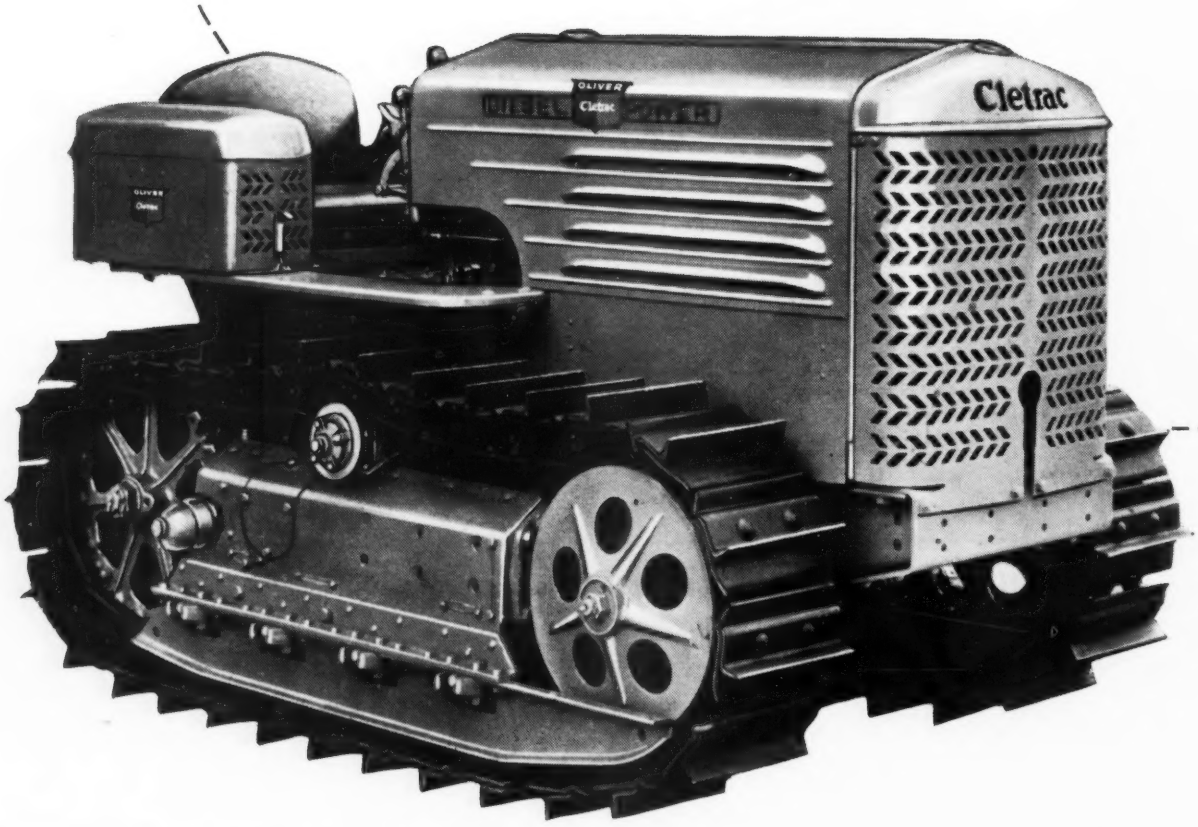
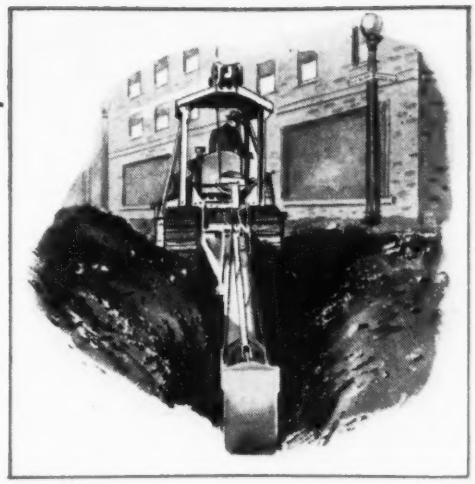
ditchdigger
backfiller
loader

in 1 package





Here's the right combination for economical ditching . . . an Oliver "Cletrac" track tractor, a Sargent Overhead Shovel, Backhoe and Bulldozer. The Backhoe digs the trench . . . from 3½ to 6½ feet deep . . . the Overhead Shovel lays the pipe and loads the excess earth and the Bulldozer backfills the ditch and compacts the fill. And powered by an Oliver "Cletrac," it's a package of rugged machinery that not only cuts your equipment costs but simplifies your jobs.

Converting the unit from Backhoe to Overhead is simplicity itself. Boom and bucket can be attached in an hour and detached in 10 minutes. Shovel arms and buckets can be attached and detached equally fast.

When you're not ditch-digging, this unit can be used to load sand, gravel, stone, debris or snow.

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Cletrac

a product of

The OLIVER Corporation

THE JOB JESTER

CARTOONS DRAWN FOR CONSTRUCTION METHODS

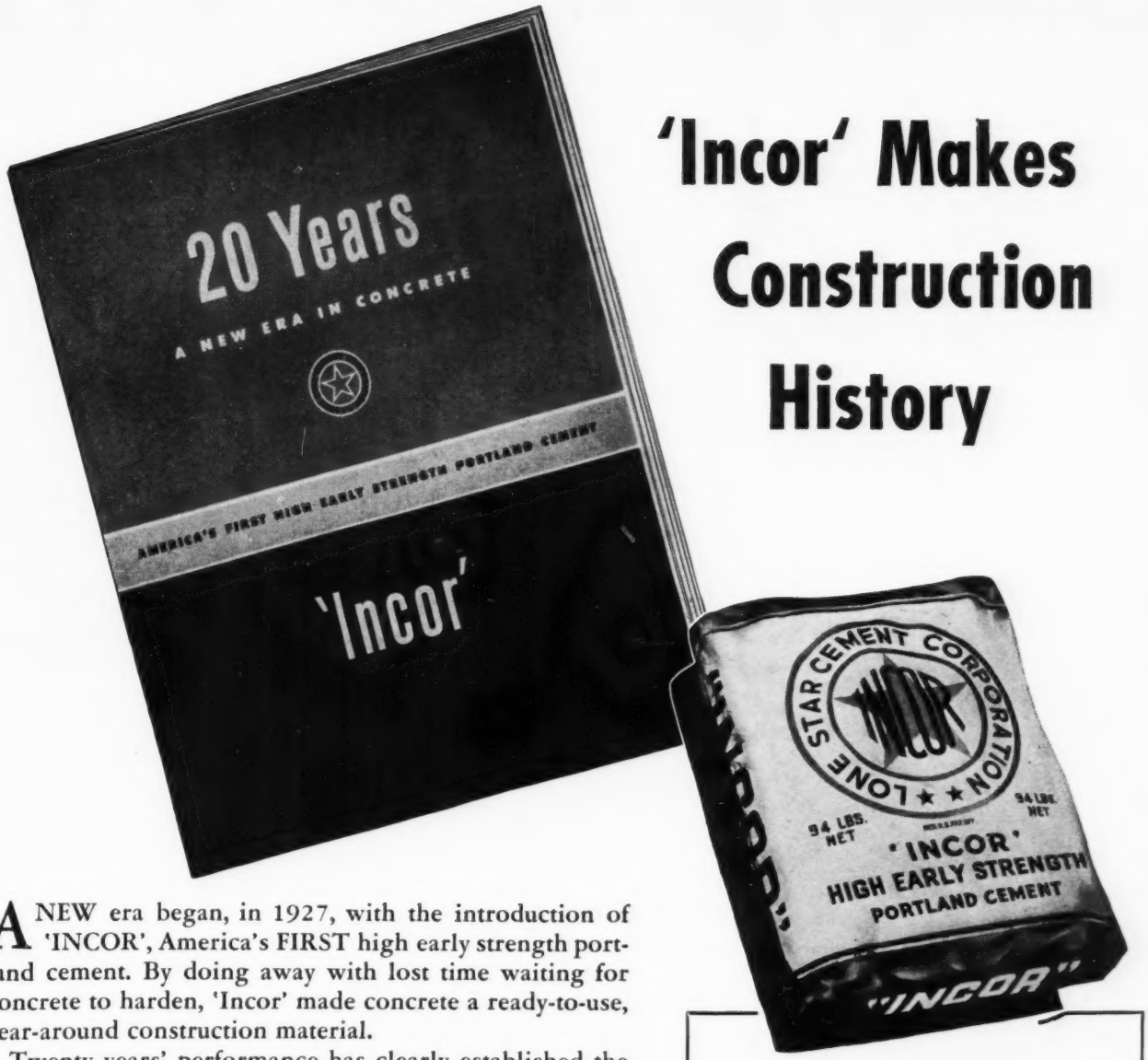
"Yup . . . yuh gotta keep humpin' on this job . . . the boss is likely to pop up any where . . . any time."

"Stop squawking! It's our lunch hour, isn't it?"

"How much to dig down to China?"

"Quit throwin' them rivets, Joe . . . 'fore I climb out there an' bop you on th' nose."

'Incor' Makes Construction History



A NEW era began, in 1927, with the introduction of 'INCOR', America's FIRST high early strength portland cement. By doing away with lost time waiting for concrete to harden, 'Incor' made concrete a ready-to-use, year-around construction material.

Twenty years' performance has clearly established the time and money savings produced by dependable 'Incor' high EARLY strength. Now what about ULTIMATE strength and durability? On this point, a Condition Survey of 'Incor' jobs after two decades of wear and tear and exposure speaks with equal clarity. This cross-section of 'Incor' performance shows that economies through maintenance-free service in use, match 'Incor' economies in construction.

Just off the press, this report to Specifiers, Users and Dealers points the way to savings which are greater today than ever — because the higher the cost of construction, the more money 'Incor'* saves, at the outset and through the years. Write for copy of 'INCOR' 20-YEAR BOOK — address Lone Star Cement Corporation, 342 Madison Avenue, New York 17, N. Y.

*Reg. U.S. Pat. Off.

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HIGH EARLY SAVINGS

Highest construction efficiency . . . faster, smoother schedules . . . 50% less forms . . . fast, economical winter construction.

HIGH ULTIMATE QUALITY

Stronger, durable concrete . . . lowest annual cost, through years of maintenance-free service.

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,000,000 BARRELS ANNUAL CAPACITY

146 Euclids

Merriman Dam at Lackawack, New York, is a $14,300,000 contract scheduled for completion in 1949. It will provide an additional one hundred million gallons of water daily to New York City. The length of the dam will be 2550 feet and the height 190 feet above stream bed.

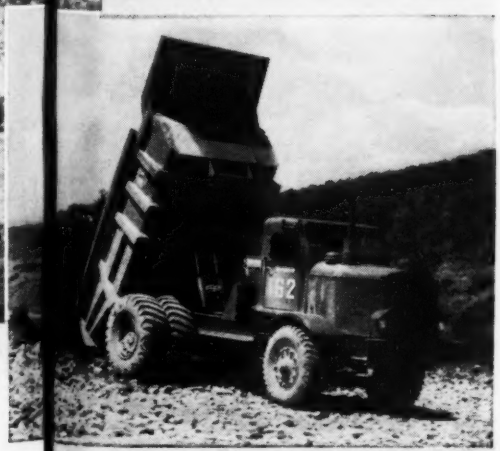
EUCLID
THE PIONEER

EUCLIDS

...s are doing the job on MERRIMAN DAM

Shown above is a 25 cubic yard Bottom-Dump Euclid being loaded by a 4½ yard shovel . . . material is hauled about 1½ miles to grizzly.

Below—a Rear-Dump Euclid discharges its 22-ton load over the bank on the rock section of the fill.



● Merriman Dam, largest rolled-fill dam in the East, will require excavation of 7,000,000 cubic yards of earth and rock. It is being built by S. A. Healy Company, White Plains, N. Y., for the Board of Water Supply of New York City. When completed it will furnish the nation's largest city with 100,000,000 gallons of water daily and will store 50 billion gallons.

EUCLIDS ARE ON THE JOB . . . A fleet of 146 "EUCS" hauls rock, earth and rip-rap from borrow pits to grizzly to fill. Rear-Dump Euclids range in capacity from 15 to 22-tons. . . . Bottom-Dumps from 13 to 25 cubic yards, struck measure. Loaded in various borrow pits by shovels of 2 to 4½ yard capacity, Bottom-Dump "EUCS" haul material to the grizzly and dump without stopping. Both Rear-Dumps and Bottom-Dumps are used to move rock and earth from the grizzly to fill. Loaded hauls average from ½ to 1½ miles in length.

On this huge project as on hundreds of other earth moving jobs, Euclids have lived up to their reputation for top performance. Ability to move big yardage under a wide range of operating conditions has enabled the contractor to keep the work ahead of schedule. The rugged construction, large capacity and staying power of Euclids result in low cost per ton or yard moved.

Your Euclid Distributor or Representative will be glad to show you how Euclids can cut your hauling costs and increase your profits.

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M-B Power Grader

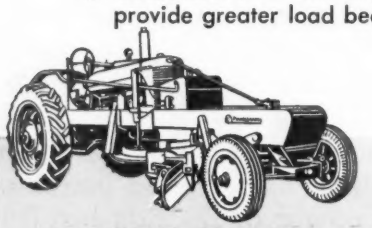
Moves More Earth in Less Time

BUILT TO PERFORM HEAVY DUTY JOBS AT LOW COST

The Meili-Blumberg PG-10 Power Grader moves more earth easily and quickly due to the finger-tip, hydraulic controls which give operator full control of blade at all times. Balanced weight construction gives maximum blade pressure, which converts 40 H.P. engine into low cost operation. Other outstanding features include:

- **STRENGTH** — the all-welded frame construction, together with worm-type steering gear, gives maximum blade performance and is designed to withstand severe stresses.
- **CAPACITY** — Critical points are reinforced to provide greater load bearing capacity.
- **BLADE PRESSURE** — The direct application of hydraulic power on the moldboard assures maximum blade pressure.
- **MANEUVERABILITY** — Revolving blade and precision hydraulic controls make the PG-10 Power Grader easy to operate.
- **MANY USES**—The M-B Power Grader is particularly adapted to perform such jobs as street and highway maintenance and many types of construction work, such as road building, parking areas, sewer and grading jobs, and building projects.

Write for M-B Grader Bulletin



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Designed for all types of grading and filling jobs. Hydraulic controls make it easy to operate. Used by state highway departments, counties, cities and industrial plants. Low operating and maintenance costs.

M-B MARKERS

Ideal for striping streets, parking areas, airports, playgrounds, industrial plants, etc. Rugged, compact construction. Hand or self-propelled models. M-B Markers are versatile to operate . . . have a large capacity . . . provide fast, low-cost striping.

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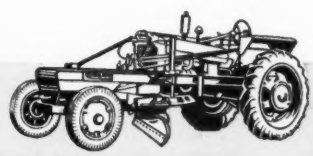
Sturdily constructed with all-steel welded frames and Tilt-Bed platforms for easy loading. Designed for hauling various types of tractors with attachments, rollers, tampers, shovels, graders, ditchers, air compressors, etc. Sizes 2½ to 10 tons.



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Lightweight Maintainer engineered for heavy duty maintenance work. For contractors, towns, cities and highway departments. Attachments such as cab, scarifier, power sweeper, snow plow, bulldozer blade, and leaning wheels, available.

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GET THE COMPLETE COST-SAVING STORY. A Motorola Field Engineer will be glad to call to discuss your specific communications problem. No obligation. WRITE TODAY!

Motorola Guarantees Full Channel Utilization Through "Precision Selectivity"

"PRECISION SELECTIVITY" requires no reduction of channel width. Motorola *guarantees* utilization of the full channel width authorized by the Federal Communications Commission with consequent maximum noise reduction.

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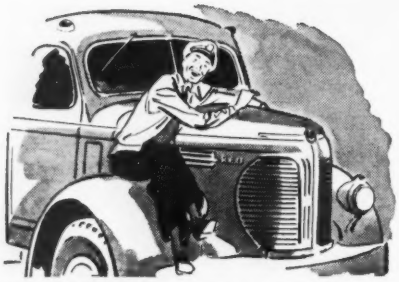

"Sure thing! We've got a new baby . . . she's mine and the boss's, too. She's a beauty . . . tough and rugged . . . she's a new REO!

"This new REO is *all truck*—from the rivets in her massive frame to the cab top."

"REO's 'More-Load' design cuts inches off the wheelbase. You handle full payload with a more compact unit. Sure, the boss is happy. 'More-Load' design spells more profit!

"As for me, REO's shorter wheelbase means easy handling—time and trouble saved."

"The service gang cheers when a REO rolls in. REO's cowl-hinged hood offers the most accessible engine of any truck.

"REO remembered service men when they combined rugged basic construction and design that saves hours in service time."

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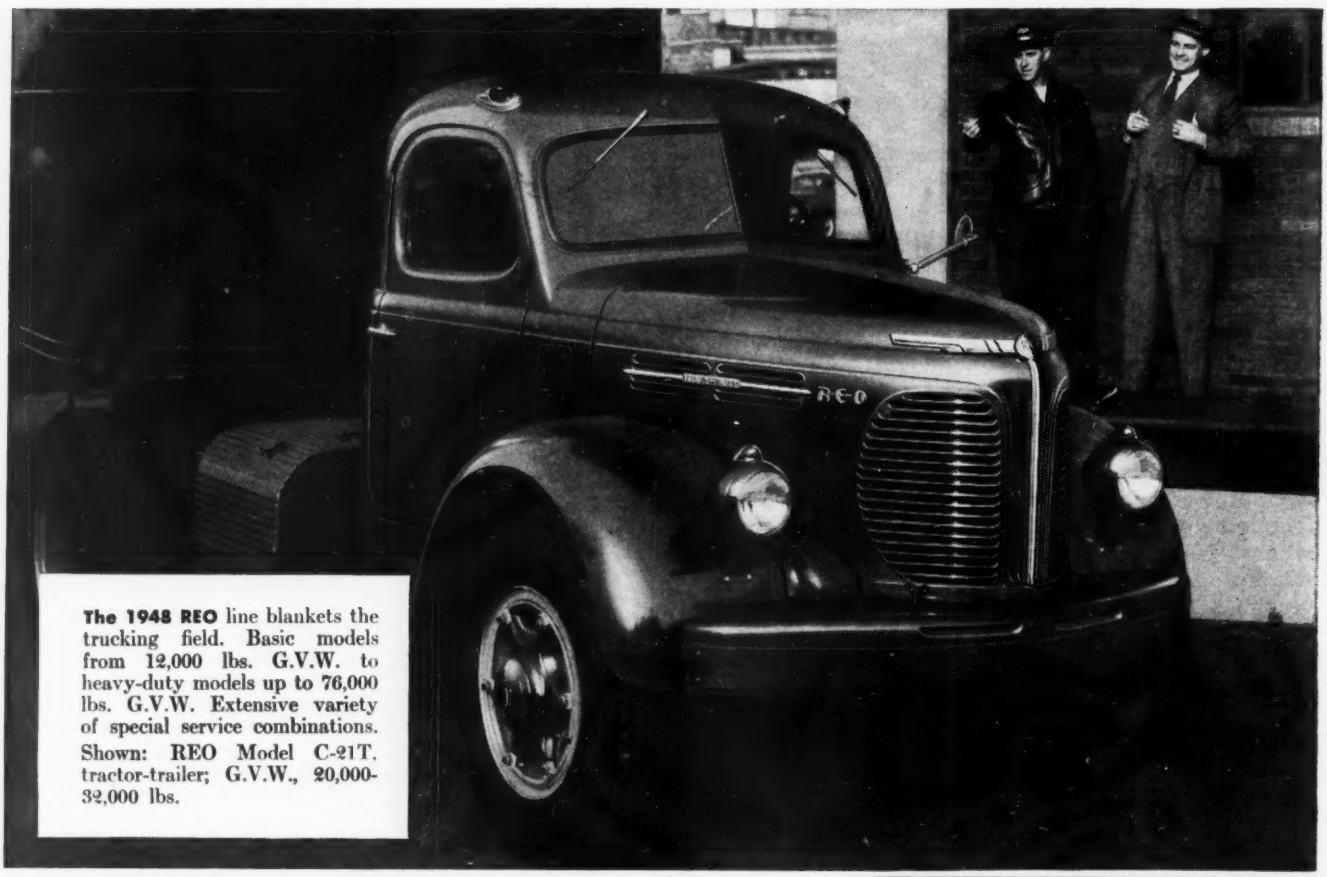
No matter what your trucking job may be, there's a REO for every one. REO knows that jobs differ between operators. So, you select your REO from a wide range of tractor and truck chassis . . . with multiple choices of engines, wheelbases and cab-to-axle dimensions. There's a REO to fit *your* job.

When you deal with REO, you're working with truck specialists. And *every* REO outlet—dealer, distributor or factory branch—gives you complete service. Stop in, or write for specifications of the new 1948 REO models. Then check REO "More-Load" design before you order any truck. REO MOTORS, INC., Lansing 20, Michigan.



The 1948 REO line blankets the trucking field. Basic models from 12,000 lbs. G.V.W. to heavy-duty models up to 76,000 lbs. G.V.W. Extensive variety of special service combinations. Shown: REO Model C-21T, tractor-trailer; G.V.W., 20,000-32,000 lbs.

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"Remember, too, that at the A.T.A. National Truck Roadeo drivers who placed first and second in all three events chose REO. The shorter wheelbase and easy maneuverability you get with REO 'More-Load' design really pays off!"

Check REO "More-Load" design before you order any truck

REO
TRUCKS AND BUSES

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DRAGLINE WORK

REMOVING SHEETING

CLAMSHELL WORK

Look at this picture! Here *is* Crane versatility. There are five Northwests in this picture—five of the 68 Northwests bought by Walsh Construction Company of New York City.

In the foreground a Northwest is driving piles. Then comes a dragline operation. Behind it (you can just see the boom) a Northwest is pulling sheeting. In the distance is a clamshell job and another Northwest driving sheeting.

That's one thing about a Northwest—it is an all 'round Crane—fast, easy to handle, smooth in operation, brings you the *feel of the load,* can't be shut down because of control failure, steers easily and brings you low cost upkeep because of its simplicity of design.

Let us tell you about Northwest advantages in detail. Plan to have Northwests on your future jobs.

NORTHWEST ENGINEERING COMPANY

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Still the Standard toward which others build!

If you have a REAL ROCK SHOVEL *you won't have to worry about output in dirt*

NORTHWEST

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A FAST-MOVING MIXER...

3½—S Tilting Mixer. Capacity, 3½ cu. ft, plus 10% overload (A.G.C. rating).

Quickly spotted and towed, this half-bag mixer is a cost-cutting combination of strength, lightness and efficiency. Other Ransome Blue Brute Mixers in capacities up to 126 cu. ft.

AIR AT SHORT NOTICE...

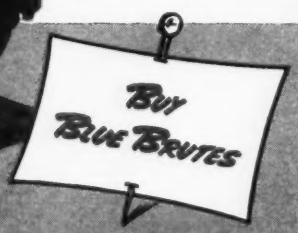
A light-weight, handy compressor that can get around *fast!* Powers light hand-held Rock Drill, Paving Breaker or equivalent air tools through its easy-breathing Feather* Valves — with unfailing dependability and economy.

*Reg. U. S. Pat. Off.

60′ Contractor's Portable Compressor. Other Blue Brute Compressors up to 500′ capacity.

PLENTY OF RESERVE POWER...

Blue Brute Self-Priming Centrifugal Pump. Built in A.G.C. sizes to A.G.C. standards.



Now! a Contractor's Pump by Worthington, the world's largest pump makers, with fast, dependable pickup that saves time and money. Rust- and abrasion-resistant, with built-in self-priming.

FOUR FAST WORKERS...

Though tough and powerful, Blue Brute Air Tools are light and compact, with the easy handling that means more satisfied workers . . . more work done . . . more profit for you.

Paving Breaker, WB-50 | Rock Drill, WJ-45 | Clay Digger, W-19 | Backfill Tamper, W-8

BUY BLUE BRUTES

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Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division, Holyoke, Massachusetts. Distributors in all principal cities.

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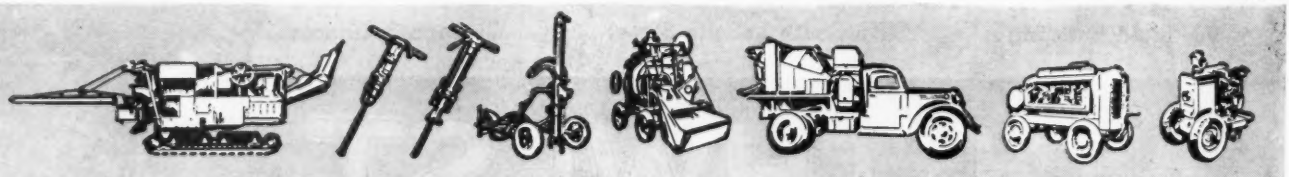

IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

you get more work out of Mack Trucks

Built-in durability plus exclusive features of design explain the stand-out performance of Mack trucks on punishing excavation jobs. Mack Model LR, specially engineered for this service, is proving to cost-conscious contractors like Frank Donatelli & Sons, Pittsburgh, Pa., that a Mack on the job means more work done on the job.

because . . we put more work into Macks

Mack trucks for off-highway service take the toughest terrain in stride. Whether it's uneven ground, slippery mud or sand, Mack's exclusive Power Divider assures good going by effectively transferring power to the wheel having the best traction. Two distinct types of the Power Divider are available, one for four-wheel trucks (shown here) and another for six-wheelers.

Mack

trucks for every purpose

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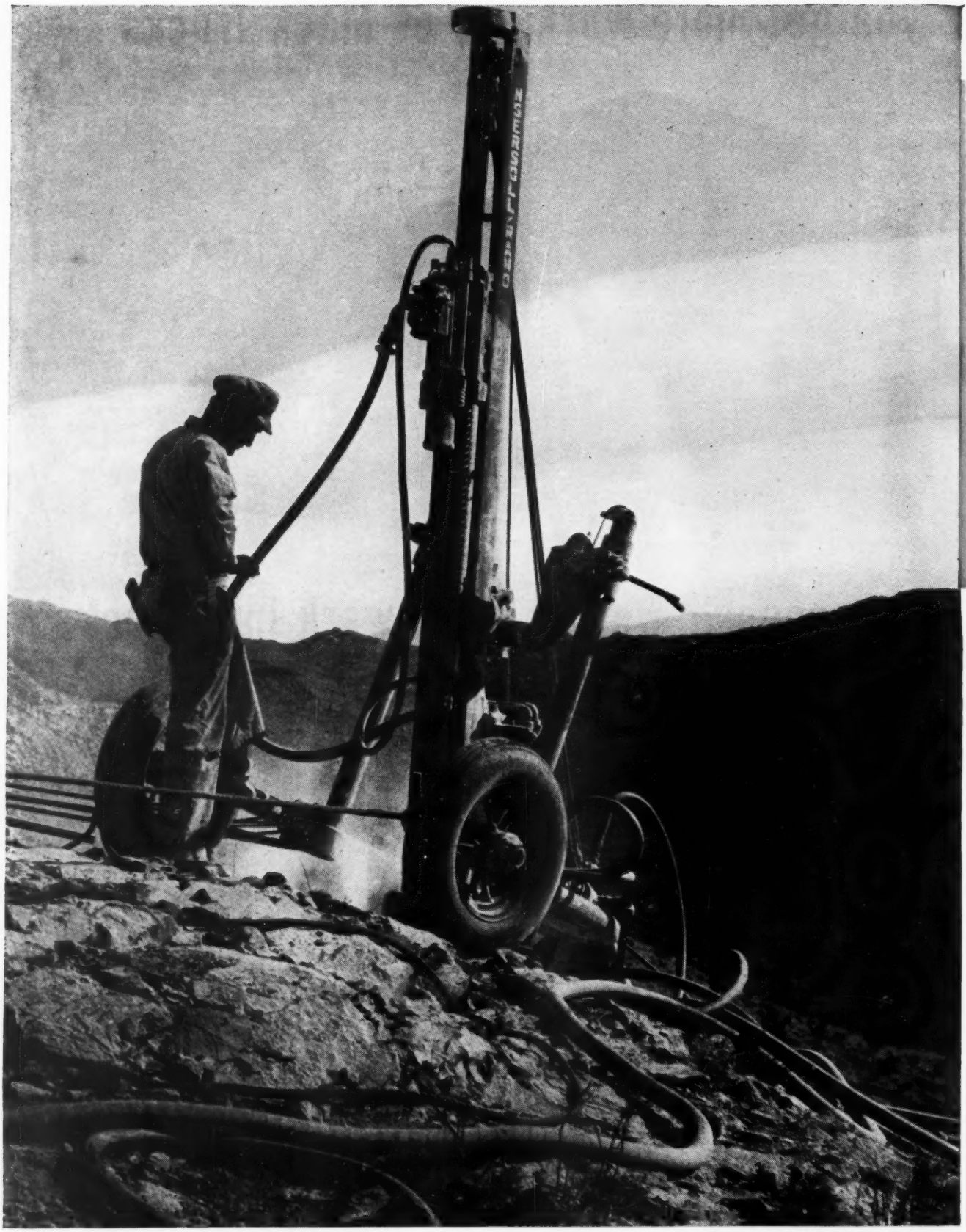
SINCE 1900, AMERICA'S HARDEST-WORKING TRUCK



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presents the
TONY MARTIN SHOW
every Wednesday night.
METROPOLITAN OPERA
broadcasts
every Saturday afternoon.

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TEXACO

UP GOES YOUR FOOTAGE...
DOWN COME YOUR COSTS

When your drills are protected against wear and rust with *Texaco Rock Drill Lubricants E.P.*

THERE is less work for the "drill doctor" when you keep drills in condition with *Texaco Rock Drill Lubricants E.P.* These fine "extreme pressure" lubricants have ample film strength to protect moving parts under even the severest conditions.

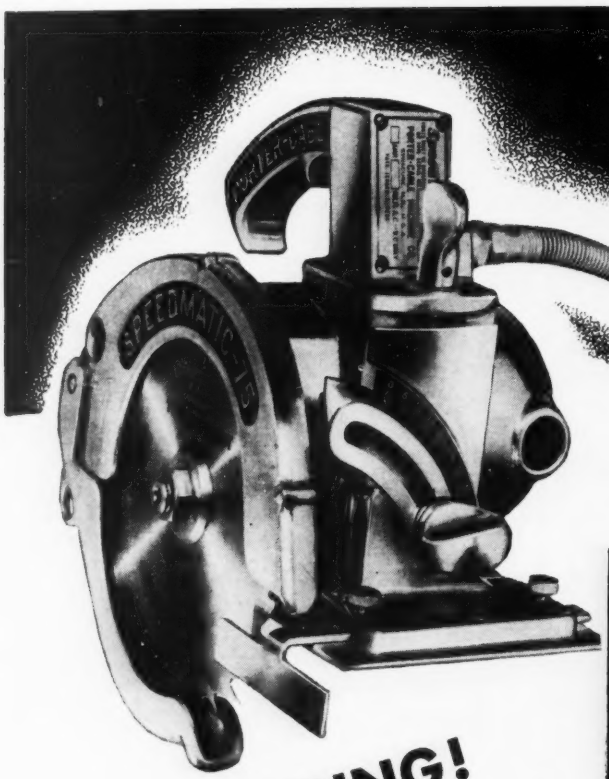
In addition, *Texaco Rock Drill Lubricants E.P.* resist oxidation, flow readily, and prevent rust whether drills are running or idle. Their use helps you drill more footage, assures less servicing, longer drill life.

Texaco Rock Drill Lubricants E.P. are approved by leading rock drill manufacturers. Use the viscosities recommended for your particular drills and operating conditions. And to keep your compressors efficient — valves clean, rings free, airlines clear — use the recommended *Texaco Alcaid, Algol or Ursa Oil.*

A Texaco Lubrication Engineer will gladly advise you. Just call the nearest of the more than 2500 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Rock Drill Lubricants E.P.



Easier to Handle

Porter-Cable Speedmatic SAW

NO VEERING!
NO TWISTING!
NO TIPPING!

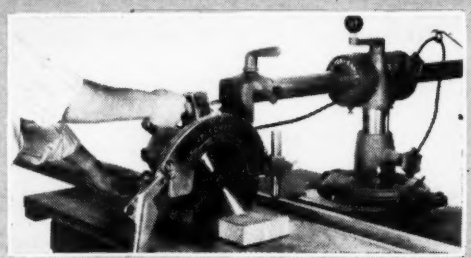
● In a power saw, speed alone is not enough. The question is—does it handle easily? Does it keep straight to line without veering and tipping? Does it cut at any angle and still keep its balance? Does it produce better work?

Once you hold a Speedmatic in your hand, you'll answer every question with a big YES.

Speedmatic cuts straight and fast with less fatigue.

1. It's SCIENTIFICALLY BALANCED for one hand operation.
2. The broad shoe is CORRECTLY PLACED for steady rest. Prevents veering, cramping, twisting and swerving.
3. The blade is UNUSUALLY FAST—whirls around at 7000 rpm! Practically feeds itself without "pushing."
4. It's ADAPTABLE to any angle or depth cutting. Rips, cross-cuts, bevels. Saws mitres . . . does dado cutting. Does not require pre-marking for a square cut.

EXTRA UTILITY FEATURE



Without tools you can attach the Speedmatic to the Porter-Cable Radial Swing Arm . . . Doubles utility of the saw as a slide or rip saw for handling a number of duplicate pieces.

PORTER-CABLE MACHINE COMPANY

1920-2 N. SALINA ST. SYRACUSE, N. Y.

SEE! THE SPEEDMATIC

today at hardware stores, mill supply houses, building material dealers!

for lowest first cost...

and HIGHEST YARDAGE PER HOUR on your small earthmoving jobs

you can't beat LAPLANT-CHOATE

4-yd. hydraulic operated scrapers and high speed, rubber-tired industrial tractors . . . .

LaPlant-Choate 4-yd. scrapers have all the features for moving more dirt at less cost. Offset cutting edge and powerful hydraulic down pressure insure instant penetration in any type of material and 25% faster loading. Positive forced ejection means fast, accurate spreading. Modern design and low center of gravity provide maximum maneuverability and minimum maintenance and upkeep expense.

You can use these handy 4-yd. units with almost any type of industrial rubber-tired tractor with sufficient horsepower. They will pay for themselves and the tractor in a hurry and step up your profit range on an infinite variety of earthmoving jobs.

Ask your nearest LaPlant-Choate distributor for a copy of Bulletin A-1142-A for specifications. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa; 1022 77th Avenue, Oakland 3, Calif.

COMPARE THE COST AND PRODUCTION

No. of Units	Approx. Cost Tractor & Scraper	*Production in Yds. Per Hour One Way Haul 200'	400'	600'	1000'	2000'
1	$ 6,500	69	55	50	44	32
2	13,000	138	110	100	88	64
3	19,500	207	165	150	132	96

*Production based on 50 minutes per hour operating efficiency, level loading, average working conditions and average material.

Easily converted for use with track-type tractors.

LAPLANT-CHOATE

HIGH SPEED EARTHMOVING EQUIPMENT

FOR LOWEST POSSIBLE COST PER YARD..PER JOB..PER YEAR

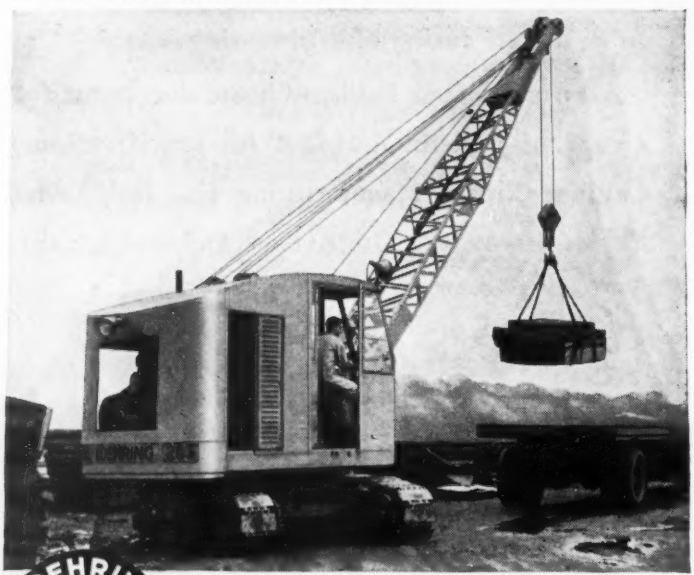
KOEHRING HEAVY-DUTY HALF YARD

2-in-1 SHOVEL BOOM Cuts Cost 30% When You Add Backhoe to Shovel

INDEPENDENT TRACTION Steps Up Crane, Clamshell, Shovel Output

Husky 2-in-1 Shovel Boom meets both shovel and backhoe requirements, makes trench dressing easy. Boom does not "weave."

Because the 2-in-1 Shovel Boom is standard equipment on the Koehring 205 shovel, backhoe job profits can be yours with only small additional investment. Same boom serves both attachments. Front end equipment to convert Koehring 205 shovel to backhoe costs approximately 30% less than with machines using conventional backhoe attachment with special boom. You get a huskier shovel boom PLUS a rigid backhoe boom that never weaves. Backhoe dipper never turns away from cut. Backhoe sidecutters can be used to full advantage in widening trench or dressing side of basement excavation. Because 205 does complete job, hand finishing is unnecessary. Low investment cost on backhoe attachment increases profits on both shovel and backhoe work.



Independent travel — travel while you swing, hoist boom or load — makes travel-time productive time with any front end.

Swing and Hoist While You Travel

With the Koehring 205, you don't lose productive time while getting ready or worry about boom clearance when you turn. You can swing, hoist load, or change boom angle as you travel. Or you can carry on all four operations — travel, swing, raise or lower load and operate boom hoist — all at the same time. You never stop work to maneuver the turntable into a precise, hard-to-reach travel or steering position. With the Koehring 205, you steer and travel with turntable in any position. This is a valuable time saver in tight quarters. You can often work as you travel. Because you handle several operations simultaneously, move-up time is no longer unproductive. With any front end, you get more work done every shift.

KOEHRING HEAVY DUTY

KOEHRING COMPANY

Milwaukee 10, Wisconsin

On Koehring 205 shovel, chain-driven double-cable crowd gets extra power to the dipper for tough digging jobs. Low center of gravity, well in back of center of rotation, steps up digging stability.

KOEHRING for hauling and paving

Koehring Dumptor has no body hoist, dumps in 1 second in any weather. Seconds saved add up to extra yardage every day.

Koehring *twinbatch* paver gets highway jobs through on schedule, in the money. Time-tested, job-tested, Heavy-duty construction.

Power! Traction! Speed!

The new Allis-Chalmers HD-19 and Baker Bulldozer are setting remarkable records for low cost yardage on the toughest jobs in the nation.

With over 24 tons of fighting weight, this powerful bulldozing team provides speed, power and traction never before available.

ABOVE: Engine Mounted Hydraulic Bulldozer for HD-19
BELOW: Engine Mounted Cable Bulldozer for HD-19

Baker Bulldozers and Gradebuilders were designed from the blueprint stage up, to harness the terrific power of the HD-19. As a result you get every ounce of power at the blade — positive all weather traction for tough going — blade operating speeds that conform to travel speeds — fast, easy operating controls — good visibility, and a complete package of power, versatility and operating economy.

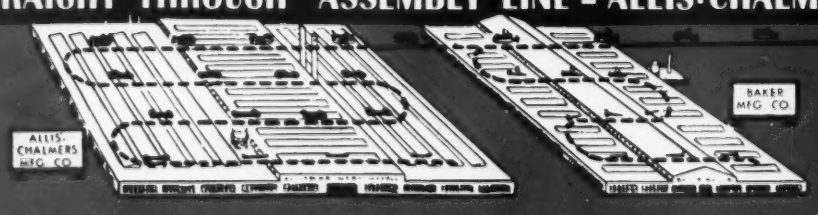
Before you start your next job — get started right. Send for literature today on the Baker Cable or Hydraulic Bulldozer and Gradebuilder.

BAKER MFG. CO., SPRINGFIELD, ILL.

BAKER

BAKER They Go Together

"STRAIGHT THROUGH" ASSEMBLY LINE - ALLIS-CHALMERS TO BAKER TO YOU!



The modern Baker plant with its completely equipped fabricating, machining and blacksmithing shops, adjoins the Allis-Chalmers crawler tractor plant.

When you order an A-C tractor with Baker bulldozer or gradebuilder, your tractor leaves the A-C assembly line, crosses a narrow court and goes on the Baker final assembly line.

FORD BUILT ENGINES FOR INDUSTRIAL POWER

RIGHT POWER

for your job or equipment in the Ford Industrial Engine line!

3 WAYS! RIGHT

RIGHT FEATURES

. . . the best of the new, from Ford, the "Power Headquarters!"

For Power . . . Pick Ford! Ford engines are completely built up, ready to put on the job. Send now for engine data sheets that show you how Ford Industrial Power fits your needs! Just address a postcard to:

RIGHT SERVICE

right around the corner at Ford Dealers everywhere!

FORD MOTOR COMPANY

INDUSTRIAL AND MARINE ENGINE SALES DEPARTMENT

3506 SCHAEFER ROAD • DEARBORN, MICHIGAN

Listen to the Ford Theater over NBC stations Sunday afternoons, 5:00 to 6:00 p.m., E. S. T.

NEW TRUCKS-

NEW Styling

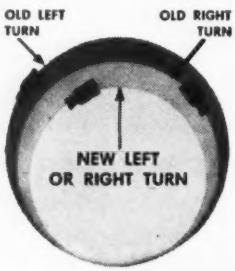
Here are wide, massive trucks representing DESIGN with a PURPOSE . . . trucks combining appearance with comfort, safety, performance, economy, and ease of handling.

NEW Ease of Handling

Less turning space needed . . . right or left. Better weight distribution

Remarkable new ease of handling and driving is yours in these new "*Job-Rated*" trucks. You can turn them in much smaller circles. You can park, back into alleys or up to loading platforms with much greater ease. You get all this with a new type of steering, in combination with shorter wheelbases that accommodate full-size bodies, and the roomier, longer cabs.

You get much better weight distribution, too, with this new design. Front axles have been moved back, and engines forward. This places more of the engine and cab weight on the front axle. Loads are more evenly distributed.



NEW COMFORT

⑦ **7-INCH SEAT ADJUSTMENT** . . . with safe, convenient hand control.

① **PLENTY OF HEADROOM**

② **STEERING WHEEL** . . . right in the driver's lap.

③ **NATURAL BACK SUPPORT** . . . adjustable for maximum comfort.

④ **PROPER LEG SUPPORT** . . . under the knees where you need it.

⑤ **CHAIR-HEIGHT SEATS** . . . just like you have at home.

⑥ **"AIR-O-RIDE" CUSHIONS** . . . adjustable to weight of driver and road conditions.

ALL THIS... *and more...with the* NEW DODGE

REALLY NEW!

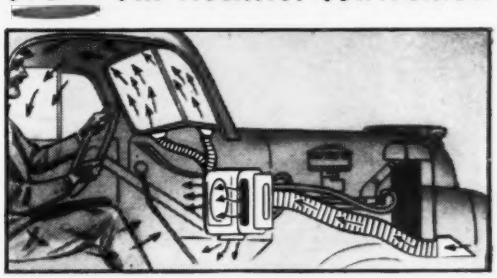
NEW Tractors and other High Tonnage Models!

You'll find, in these *new* high tonnage models, many *exclusive* advancements: Strong, durable metals and alloys . . . precise machining, and a much wider range of equipment. Engines have cost-reducing sodium-cooled valves, and stellite-faced exhaust valves and seat inserts. Other outstanding features include sturdy 5-speed transmissions; rugged 12″ and 13″ clutches; smooth, safe brakes—finest in the trucking industry.

NEW "Pilot-House" Cabs with all 'round vision

Note the tremendously increased *vision* of these cabs. Windshields and windows are higher and wider. New rear quarter windows add still more to vision, and to safety. With this increased glass area throughout, you get "Pilot-House" vision . . . in *all* directions. With welded all-steel construction, they're the *safest* cabs ever built.

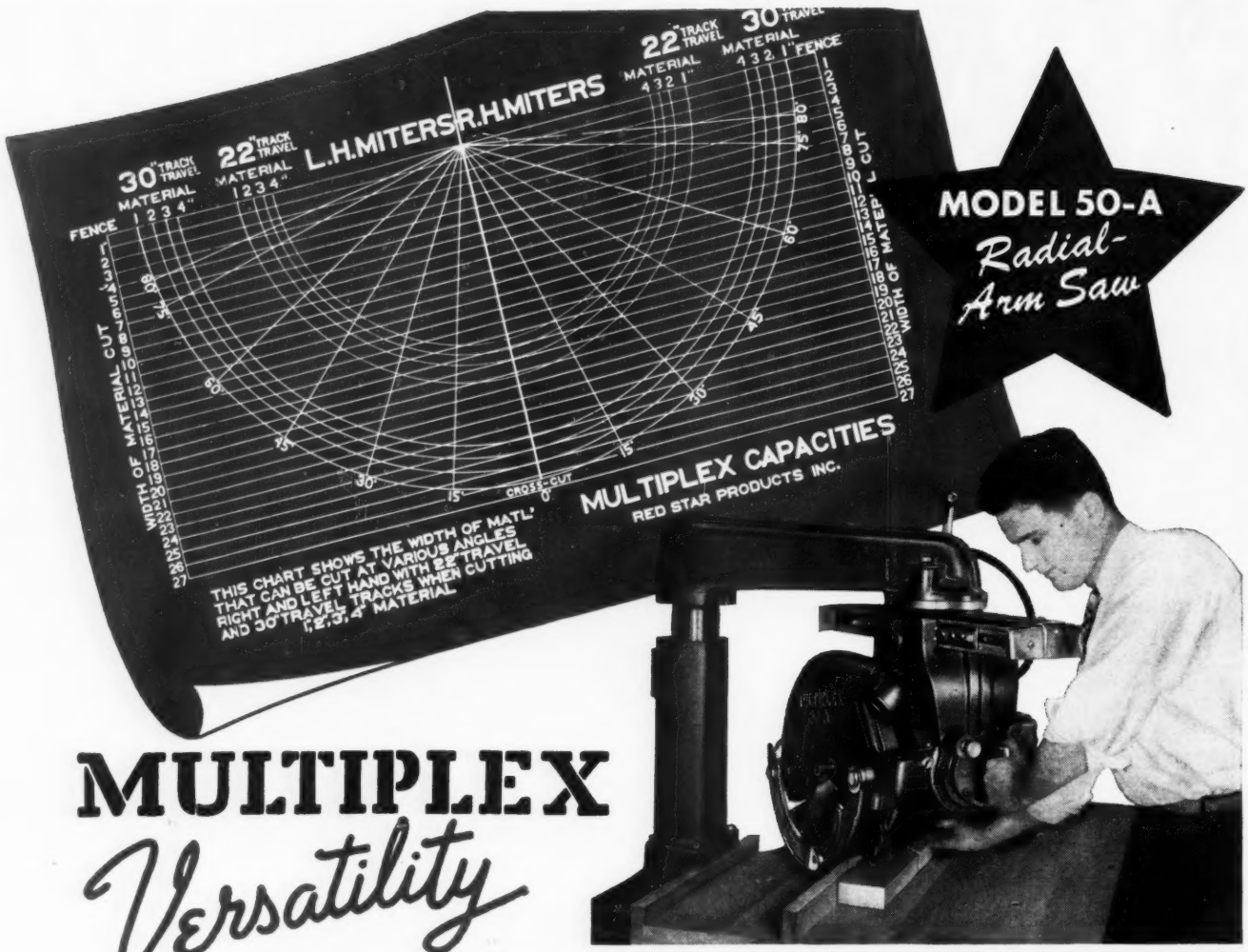
NEW All-Weather Ventilation



You drive in comfort whether it's 10° below or 100° above. Available is an ingenious combination of *truck* heater, defroster vents, vent windows, cowl ventilator, and a new fresh air intake from behind the front grille. It's the *finest* "All-Weather" heating and ventilating system ever installed in a truck cab.

"Job-Rated" TRUCKS

Now on Display
SEE YOUR
DODGE DEALER



MODEL 50-A
Radial-Arm Saw

MULTIPLEX *Versatility*

PAYS OFF IN MORE PROFITS

In buying a Multiplex Radial Arm Saw you buy performance. Study the chart above and notice the miter capacity of from O° to 90° Left Hand as well as Right Hand.

Because of the Exclusive Versatile Elbow, or center suspended track, the saw can be readily placed in an unlimited number of positions.

The Movable Table permits full usable travel of the cutting head in any position and—it enables you to bring the work to you for greater convenience.

Automatic Recording Rip Scales provide accurate and convenient means of measuring the width of rip from either the rear or front fence.

The Ball Bearing Mounted Yoke moves with exceptional ease—self-cleaning balls roll on nitralloy rods.

These are features found only in the Multiplex which assure you of more production, greater accuracy and ease of operation.

MODEL 50-A
Radial Arm Saw
POWERED BY
3, 5, 7½ or 10 H.P. MOTOR

Designed to handle heavy work in greater capacities. Available with either 22" or 30" travel track. For lighter work investigate Multiplex Models 30A and 40A.

Write today for literature or name of nearest dealer.

RED STAR PRODUCTS, INC.

3455 VEGA AVENUE,
CLEVELAND 13, OHIO U. S. A.

CROSS CUT • RIP • BEVEL RIP • BEVEL CUT OFF
PLOW • SHAPE • DADO • RAFTER NOTCH • MITER
COMPOUND MITER • TENON • RABBET

"PACKING THE PIKE"

See Your Distributor

ALABAMA—Birmingham
Equipment Service Company
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Ray Brooks Machinery Co.
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DISTRICT OF COLUMBIA—Washington
Daniel J. Murphy Co., Export Agent
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Statham Mach. & Equipment Co.
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L. Z. Howell Co.
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Flesch-Miller Tractor Co.
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Sheppard & Bogie Equipment Co.
LOUISIANA—Baton Rouge
Dunham-Pugh Co., Inc.
MARYLAND—Silver Spring
R. S. McConey
MASSACHUSETTS—Medford
Perrin, Seamans & Co., Inc.
MICHIGAN—Detroit
Acme Equipment Co.
MINNESOTA—St. Paul
Construction Equipment Sales, Inc.
MISSISSIPPI—Amory
Dairymple Equipment Co.
NEW JERSEY—Newark
North Jersey Equipment Co.
NEW MEXICO—Albuquerque
Harry Cornelius Co.
NEW YORK—Skaneateles
Hooper Engineering Co.
NORTH CAROLINA—Raleigh
Carolina Tractor & Equip. Co.
OKLAHOMA—Oklahoma City
R. C. Hardcastle Co.
OREGON—Portland
Contractors Equipment Corp.
PENNSYLVANIA—Pittsburgh
Conte Equipment Corp.
TENNESSEE—Knoxville
Power Equipment Co.
TENNESSEE—Memphis
Road Builders Equip. Co.
TENNESSEE—Nashville
Buchanan & Rooney Equip. Co.
TEXAS—Dallas & Houston
Browning-Ferris Machinery Co.
TEXAS—El Paso
Equipment Supply Company
TEXAS—San Antonio
Acme Iron Works
UTAH—Salt Lake City
Rasmussen Equip. & Supply Co.
VIRGINIA—Richmond
Bemiss Equipment Corp.
WASHINGTON—Seattle
Service Equipment Co.
WASHINGTON—Spokane
Inland Diesel & Mach. Co.
WISCONSIN—Milwaukee
Diamond-Calleton Equip. Co.
WYOMING—Cheyenne
Wilson Equip. & Supply Co.

Dealers in all foreign countries

HERE'S WHY INGRAM ROLLERS Were Chosen For Compacting the Pennsylvania Turnpike

The Pennsylvania Turnpike Commission needed rollers designed to keep operating and maintenance costs at a minimum.

They chose Ingram!

Here's why: Because ample overlap on rolls eliminates costly re-rolling. Fully enclosed moving parts cut repair costs. With variable weight, ONE roller does the job of several. Greater speed cuts working time.

And easy-to-reach controls increase operator efficiency—mean more work per hour.

In fact, for any job, for YOUR job—large or small, Ingram means more efficient, less expensive operation. Before you buy—investigate INGRAM!

MAIL THIS COUPON NOW!

FREE!

New, completely illustrated catalog. Shows latest Ingram Rollers—5 to 12-ton Models. Diesel or gasoline engines.

ACME IRON WORKS
Post Office Box 2020, San Antonio 6, Texas

Gentlemen:
Please send me your new 1948 Ingram Roller Catalog.

Name .....

Address .....

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INGRAM ROLLERS

ACME IRON WORKS • SAN ANTONIO 6, TEXAS

YOU SAVE...

WHEN THE DISTRIBUTOR SERVES YOU

right down the line these distributor services cut construction costs

ASSEMBLING

Need to assemble equipment, tools, supplies for your next construction job? Tell the distributor your requirements. He'll take over the job of ordering and expediting delivery to meet your deadline.

WAREHOUSING

Want a convenient, safe place to store equipment, tools, and supplies until needed? The distributor's warehouse performs this function for many contractors in each territory. You can draw upon products assembled there as you need them. No necessity to maintain expensive warehousing facilities at the job site.

DISPLAY

Want to inspect a variety of products before ordering? The distributor has a display and counter service. Products of many far flung factories are readily available for demonstration. This helps you to arrive at rapid and intelligent buying decisions.

REPAIR

Breakdown threatening construction progress? Just call the distributor and tell him your troubles. He maintains stocks of spare parts, ample repair facilities, and a staff of expert repair men.

STOCKING

Need something in a hurry? Again, just call the distributor. He stocks hundreds of construction products from distant factories in anticipation of your needs. Unforeseen shortages that might cause serious delays in construction are quickly eliminated.

DELIVERY

Need quick, economical delivery to the job site? The distributor maintains regular delivery service for your routine needs . . . emergency delivery service, too, when you want it. No necessity to pay freight and cartage for delivery of products from widely scattered sources.

ADVISORY

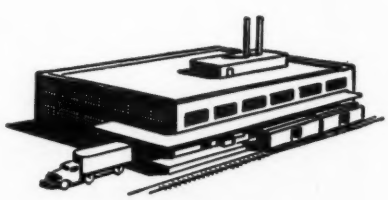
Want advice on products, product applications? Well-trained distributors' salesmen are at your service. They're fully informed on construction products; they have practical engineering ability, and they've had long experience in helping contractors lick construction problems.

THESE SERVICES AND MANY MORE ARE AVAILABLE TO YOU THROUGH YOUR LOCAL DISTRIBUTOR.

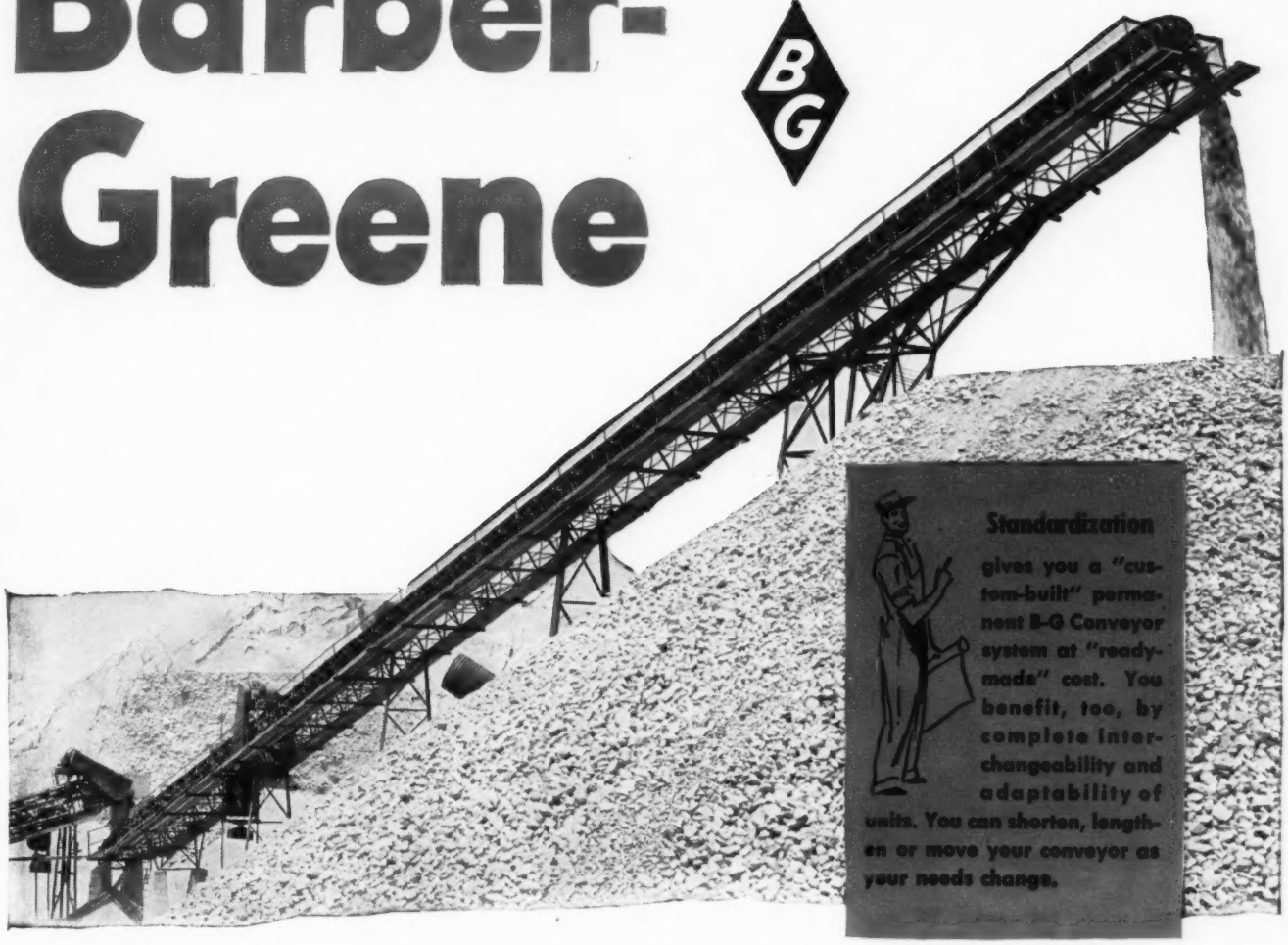
HE DESERVES YOUR SUPPORT BECAUSE YOU SAVE WHEN HE SERVES YOU.

Make Distributor's Headquarters Your Service Headquarters

No. 6 in a series of advertisements sponsored by ENGINEERING NEWS-RECORD and CONSTRUCTION METHODS showing how distributor services aid economical construction



Barber-Greene



Standardization gives you a "custom-built" permanent B-G Conveyor system at "ready-made" cost. You benefit, too, by complete interchangeability and adaptability of units. You can shorten, lengthen or move your conveyor as your needs change.

less "blueprint work" easier assembly with standardized conveyors . . . .

It's easier to select the right B-G Conveyor for your particular job—and easier to install it. That's because B-G Conveyors are *pre-engineered* and built of simple *standard* units.

Erection is little more than a matter of bolting the *standardized* units together. Frames and terminals are *pre-fabricated* . . . delivered to you, clearly marked, as complete, self-contained units. Drives and take-ups are factory-assembled, checked, tested and rated for load. B-G *pre-engineering* assures proper alignment and smooth, dependable operation on the job. What's more, you have a wide choice of equipment in the sizes and types that best meet your requirements.

Here's a "packaged" plan that may well provide the practical solution to one or more of your haulage problems. Why not call on our engineers to help you work out an efficient, economical system?

BARBER · GREENE COMPANY, AURORA, ILLINOIS

Constant flow Equipment

LOADERS PERMANENT CONVEYORS PORTABLE CONVEYORS COAL MACHINES BITUMINOUS PLANTS FINISHERS DITCHERS

WORLD'S LARGEST, M

Keeps Big Loader Operating a

HD-19 MORE THAN SUPPLIES POWER REQUIREMENTS OF EUCLID LOADER...SAVES 50 TO 60

On Terry & Steadman's Louisville Flood Wall job the new Allis-Chalmers HD-19 hydraulic torque converter tractor proved it has plenty of power to operate the big Euclid loader at capacity. Even though the ground was not scarified, the HD-19, unassisted, pulled the big machine as fast as the belt could handle the material.

And because of the torque converter, operator could start and stop tractor with throttle. Since 50 to 60 loads were obtained each hour, this many master clutch engagements were saved...obviously lengthening life of clutch. Torque converter also provided smooth, cushioned starts and stops—making it easier on tractor, loader...and operators!

What
ers, o
ful, s
will l

MOST POWERFUL TRACTOR

at Capacity

60 CLUTCH ENGAGEMENTS PER HOUR

Whatever the job...pulling loaders or scrapers, or working with bulldozers...the powerful, smooth-operating, fast-working HD-19 will lower your costs, increase your profits.

Allis-Chalmers Torque Converter Tractor . . . **HD-19**

IT'S RUGGED AND TOUGH . . . BUILT TO OUTPRODUCE & OUTLAST!

Weight: **40,000 pounds.**

Power: **2-Cycle General Motors Diesel — 163 hp. at flywheel.**

Speeds: **0 to 3 in low gear and 0 to 7 in high; reverse 0 to 5.5.**

Torque converter **automatically balances load and speed without gear shifting.**

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Originator of the Torque Converter Tractor

THE NEW *Thor*

NEW POWER

New Streamlined Design For

- *Automatic Lubrication.*
- *New plate valve and enlarged air ports deliver maximum power under varying air line pressures.*
- *Positive lock butt . . . positive air seal.*

Just open the valve . . . the new Thor Backfill Tamper will pound more dirt into the hole than you can shovel out of it!

Even the stiffest backfill is pounded solid—*quickly*, with the rapid, powerful blow of this new Thor . . . with a minimum of lifting by the operator. Varying air line pressures have no effect on this Thor power—it's designed to deliver the same maximum blow under normal or reduced pressure.

Smooth, streamlined, the new Thor will score immediately with operators. Call your Thor dealer today for a demonstration, or write for circular.

INDEPENDENT PNEUMATIC TOOL COMPANY

600 West Jackson Boulevard, Chicago 6, Illinois

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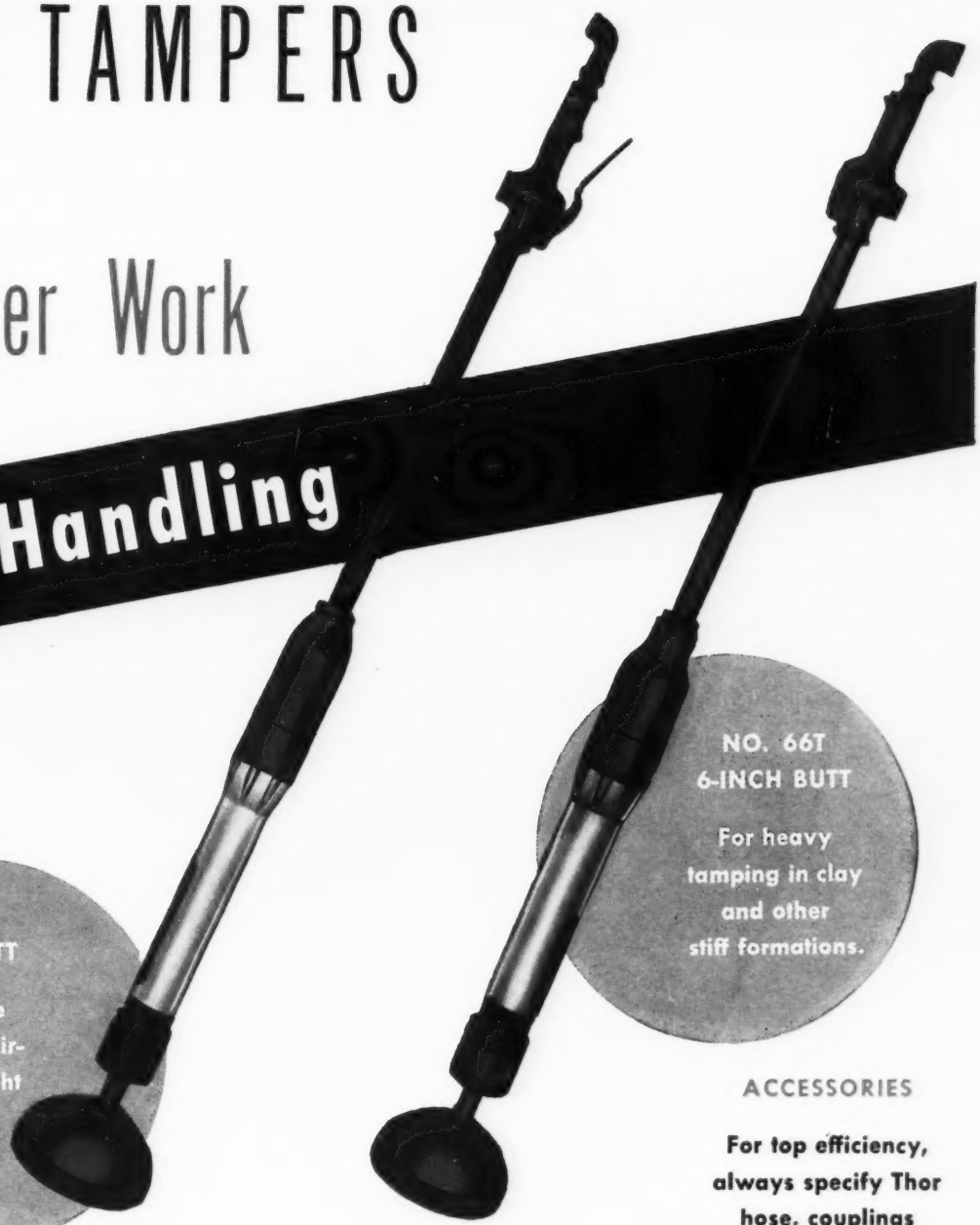
Backfill TAMPERS

For Faster Work

Easier Handling



NO. 55T
5-INCH BUTT

For average tamping requiring lightweight tool.

NO. 66T
6-INCH BUTT

For heavy tamping in clay and other stiff formations.

ACCESSORIES

For top efficiency, always specify Thor hose, couplings and clamps.

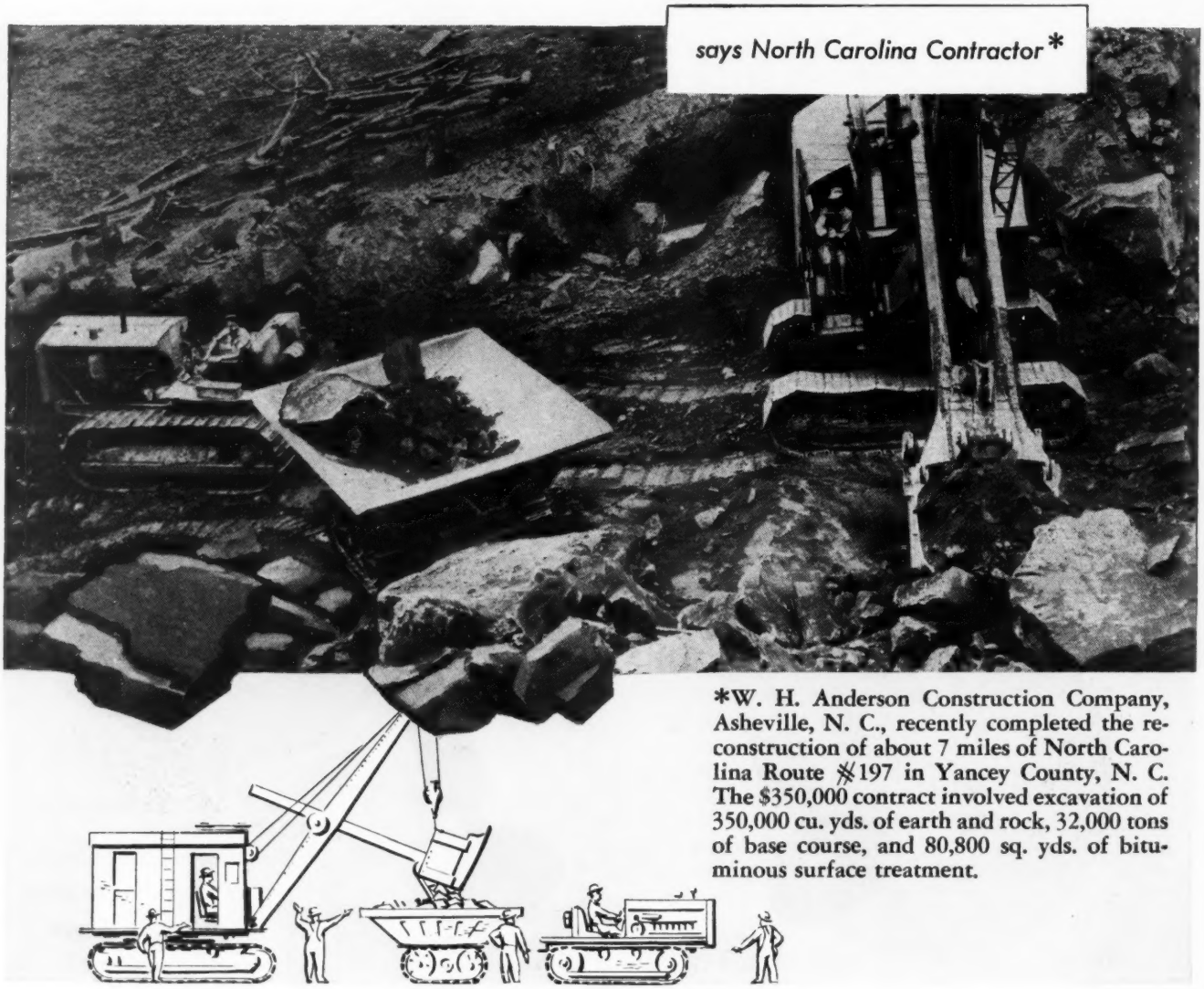
Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

"Gulf Lubricants and Fuels

are a big help in beating contract schedules"—

*says North Carolina Contractor**



**W. H. Anderson Construction Company, Asheville, N. C., recently completed the reconstruction of about 7 miles of North Carolina Route #197 in Yancey County, N. C. The $350,000 contract involved excavation of 350,000 cu. yds. of earth and rock, 32,000 tons of base course, and 80,800 sq. yds. of bituminous surface treatment.

"WITH GULF LUBRICANTS AND FUELS, our equipment has given us outstanding service over a period of years," says this prominent North Carolina contractor. "On every job, we get the kind of lubrication and fuel performance that means smooth operation and freedom from mechanical delays—which add up to effective assistance in finishing ahead of schedule."

W. H. Anderson Construction Company is one of scores of leading contractors who have found that it pays to use Gulf lubricants and fuels on every job. Always of the same uniform high quality, Gulf products work as a team to keep equipment operating at maximum efficiency and at minimum expense for maintenance. Call in a Gulf representative today and ask him to recommend the proper types and grades exactly suited for your particular requirements.

Gulf quality lubricants and fuels are quickly available to you through 1200 warehouses located in 30 states from Maine to New Mexico. Write, wire, or phone your nearest Gulf office.

Gulf Oil Corporation · Gulf Refining Company

Division Sales Offices:

Boston · New York · Philadelphia · Pittsburgh · Atlanta
New Orleans · Houston · Louisville · Toledo

GULF

Isaacson New MATCHED LINE for INTERNATIONAL'S New TD-24

HYDR. TRAC-DOZER

WINCHOIST

KABLE POWER UNIT

KARRY-SCRAPER

SUPER-ROOTER

KLEARING BLADE

KABLE TRAC-DOZER

FAS-TAMP ROLLER

PROVED ON THE JOB

with the new TD-24 . . Greater utility, longer life, and top performance for both tractor and equipment are facts, not theories . . . The Complete Isaacson Line has the strength for International's new super-tractor . . . Super work-ability to match super horsepower . . . A new high in equipment efficiency to match a new high in tractor performance.

The Isaacson Line is complete for the new TD-24, as it is for all International models . . Kable Trac-Dozers . . Hydraulic Trac-Dozers . . Karry-Skrapers . . Super-Rooters . . Klearing Blades . . Winchoists . . Kable Power Units . . Fas-Tamp Rollers.

SOLD AND SERVICED BY INTERNATIONAL INDUSTRIAL POWER DISTRIBUTORS ALL OVER THE WORLD

"Engineering For Balance"

ISAACSON

Tractor Equipment

A PRODUCT OF THE ISAACSON IRON WORKS · ROCKFORD, ILLINOIS · SEATTLE, WASHINGTON

America's Most Powerful

Get the Benefit of These Features

Greater Power—180 H.P. at the flywheel, 167 Belt Horsepower and 140 Drawbar Horsepower. Unmatched by any other crawler!

Higher Speed—The TD-24 is built for high speed operation as well as for tremendous pull.

"Planet-Power Steering" means greater drawbar pull on turns—power on both tracks! Also pivots easily!

Hydraulic "Finger-tip Control"—relieves operator of work in maneuvering this agile giant. Provides instant High-Low Range shift.

Quick Reverse Shift—bypasses speed change gears to permit instant forward-to-reverse and reverse-to-forward shift.

Synchromesh Transmission—permits shifting "On the Go"!

8 Speeds Forward and 8 Speeds Reverse—provides correct gear for each load condition.

THIS new, versatile giant of power and pull now rolls off the production line at International Harvester's mammoth Melrose Park Works. It is America's *most powerful* and *easiest to operate* crawler. It cannot be beat for work capacity!

See your International Industrial Power Distributor soon and get the whole story, including specifications and delivery data, on this new Diesel tractor. When you put the TD-24 to work on your jobs, watch your earth-moving costs drop.

Industrial Power Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue • Chicago 1, Illinois

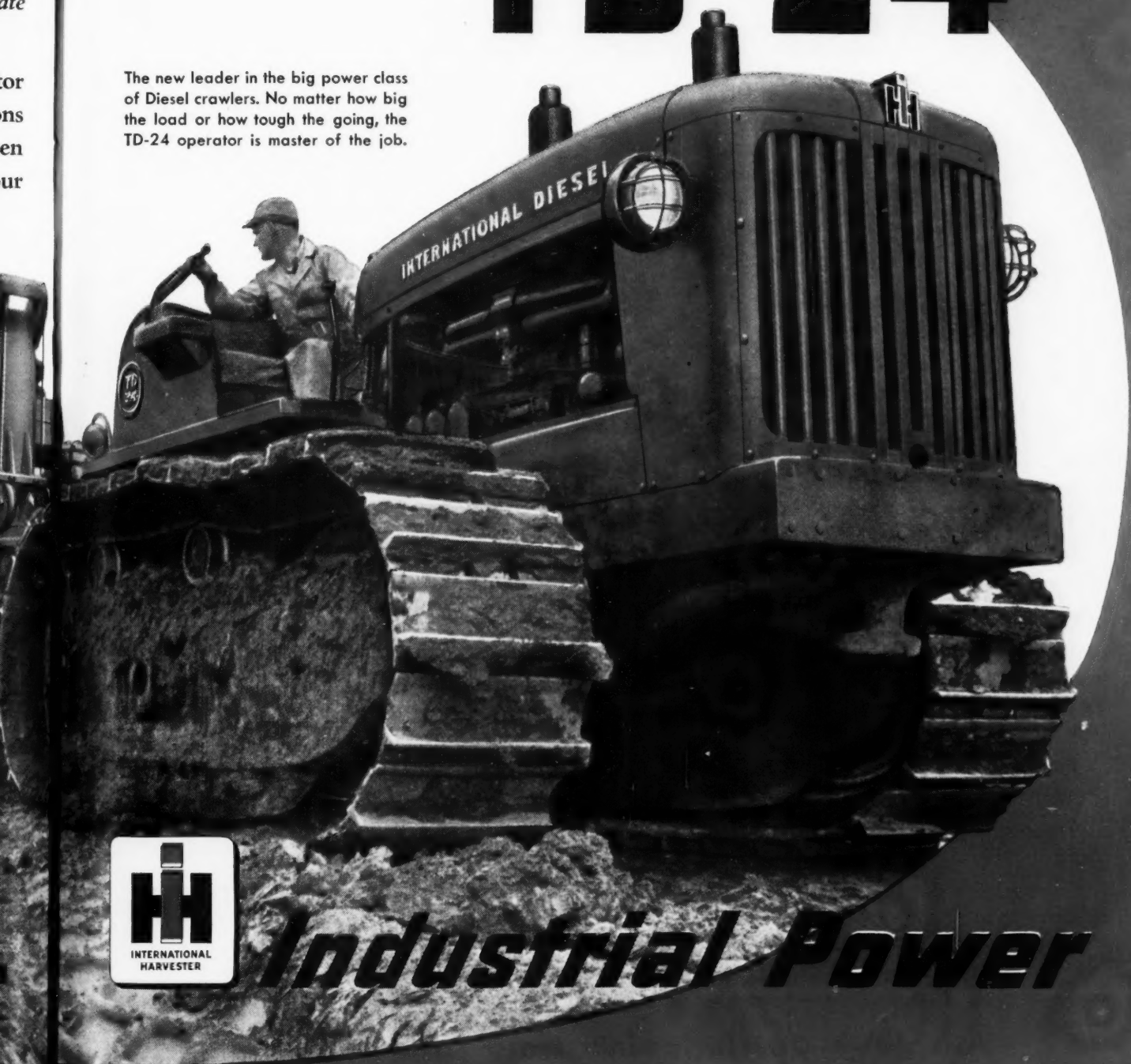
CRAWLER TRACTORS
POWER UNITS
DIESEL ENGINES
WHEEL TRACTORS

INTERNATIONAL

Crawler Tractor

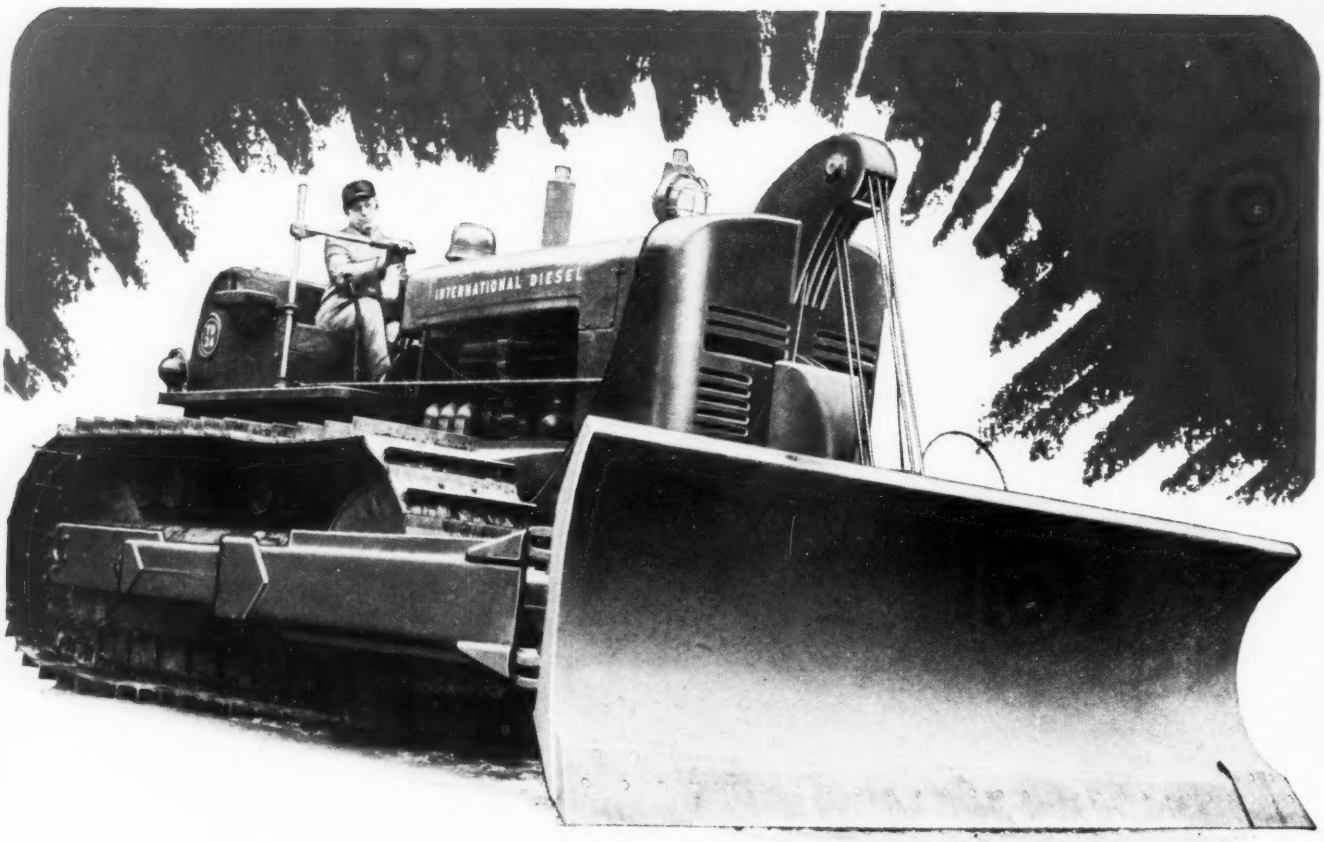
The INTERNATIONAL TD-24

The new leader in the big power class of Diesel crawlers. No matter how big the load or how tough the going, the TD-24 operator is master of the job.



INTERNATIONAL HARVESTER

Industrial Power



Standardize on Stamina

. . . with dependable HEIL matched equipment for the International TD-24 — *America's most powerful crawler*

You can be sure of profit-making yardage when you standardize on perfectly-matched HEIL equipment for International Crawlers. This ideal combination moves big pay loads faster and at lower cost than ever before. Look at the Heil line-up:

Bulldozers with scientific load-carrying contour, long-life reversible edges, and sturdy box-section construction.

Trailbuilders with the rugged A-frame that assures unusual stamina, and easy blade-angle adjustment.

Scrapers built for fast, bonus loading and controlled dumping. Open-top construction gives them double use as dump wagons, whenever you have need for such units.

This Heil line-up of earthmoving equipment is all skillfully designed to match America's most powerful crawler — the International TD-24, and the full line of International Crawler tractors as well.

Let your International Industrial Power Distributor show you why you standardize on stamina when you specify Heil equipment for International Crawlers. Here's a team that pays off in larger earthmoving profits.

THE HEIL CO.

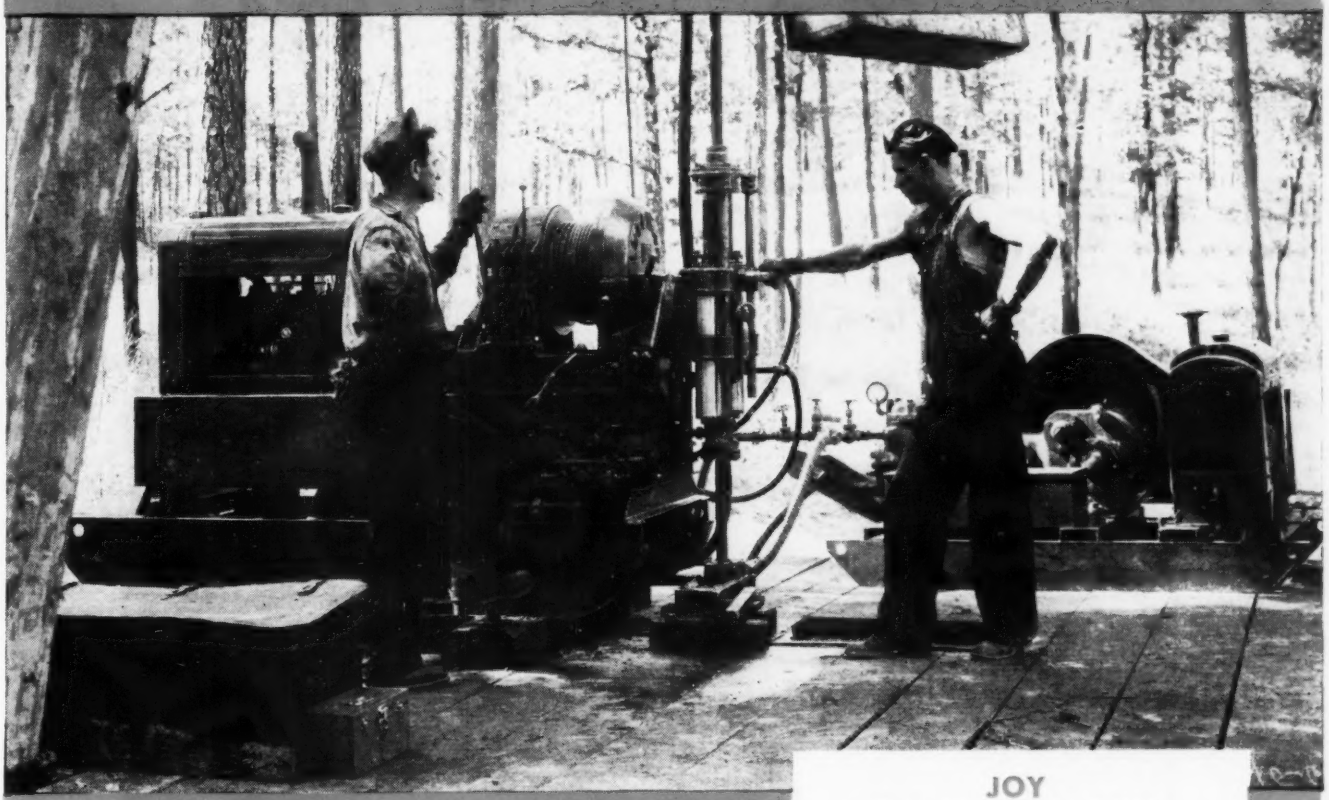
GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

R-98

You save earthmoving time and money with Heil equipment . . .

COMPLETE CORE DRILLING SERVICE

for foundation testing, prospecting and all types of exploratory work



World-wide service!

CORE DRILLING

by Contract

Whether you wish to prove your property's value, prospect new fields or determine foundations, experienced Joy crews are prepared to make test borings for you . . . quickly and economically . . . any place in the world.

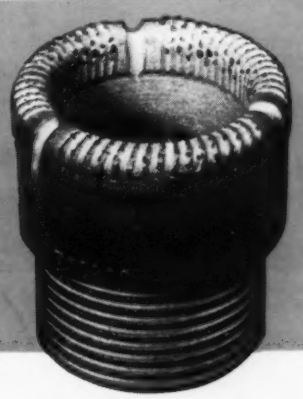
Consult a Joy Engineer or write for complete details

JOY
22-HD CORE DRILL

Conservatively rated at 1750 ft. capacity with "E" rods, the 22-HD is built for drilling in all formations. Compact design and modern lightweight alloy construction assure its portability.

SUL-SET DIAMOND CORE BITS

The ridge design of these bits allows faster drilling speed and produces unusually accurate cores.



W&D C1304

SULLIVAN DIVISION

JOY MANUFACTURING CO.

GENERAL OFFICES: HENRY W. OLIVER BLDG., PITTSBURGH, PA.

GUESSTIMATE or ESTIMATE!

ARE you making "guesstimates" when it comes to figuring jobs because you can't be sure of the exact capacity of your mixers or pavers? Or are you making accurate "estimates" based on equipment whose capacity you know right down to the last yard?

There's an easy way to know *in advance!* Just make sure the mixer or paver you buy wears an AGC Rating Plate. It is your assurance that it will deliver its exact rated capacity. For before any equipment can wear this plate, it must accurately conform to the standards set up by the Mixer Manufacturers Bureau for your protection. You can make accurate estimates . . . not "guesstimates."

Next time you're in the market for a mixer or paver, look first for the AGC Rating Plate and be sure of capacity in advance!

MIXER MANUFACTURERS BUREAU

Affiliated with the Associated General Contractors of America, Inc.

Chain Belt Company
Milwaukee, Wis.

Construction Machinery Co.
Waterloo, Iowa

Koehring Company
Milwaukee, Wis.

Ransome Machinery Co.
Dunellen, N. J.

Kwik-Mix Company
Port Washington, Wis.

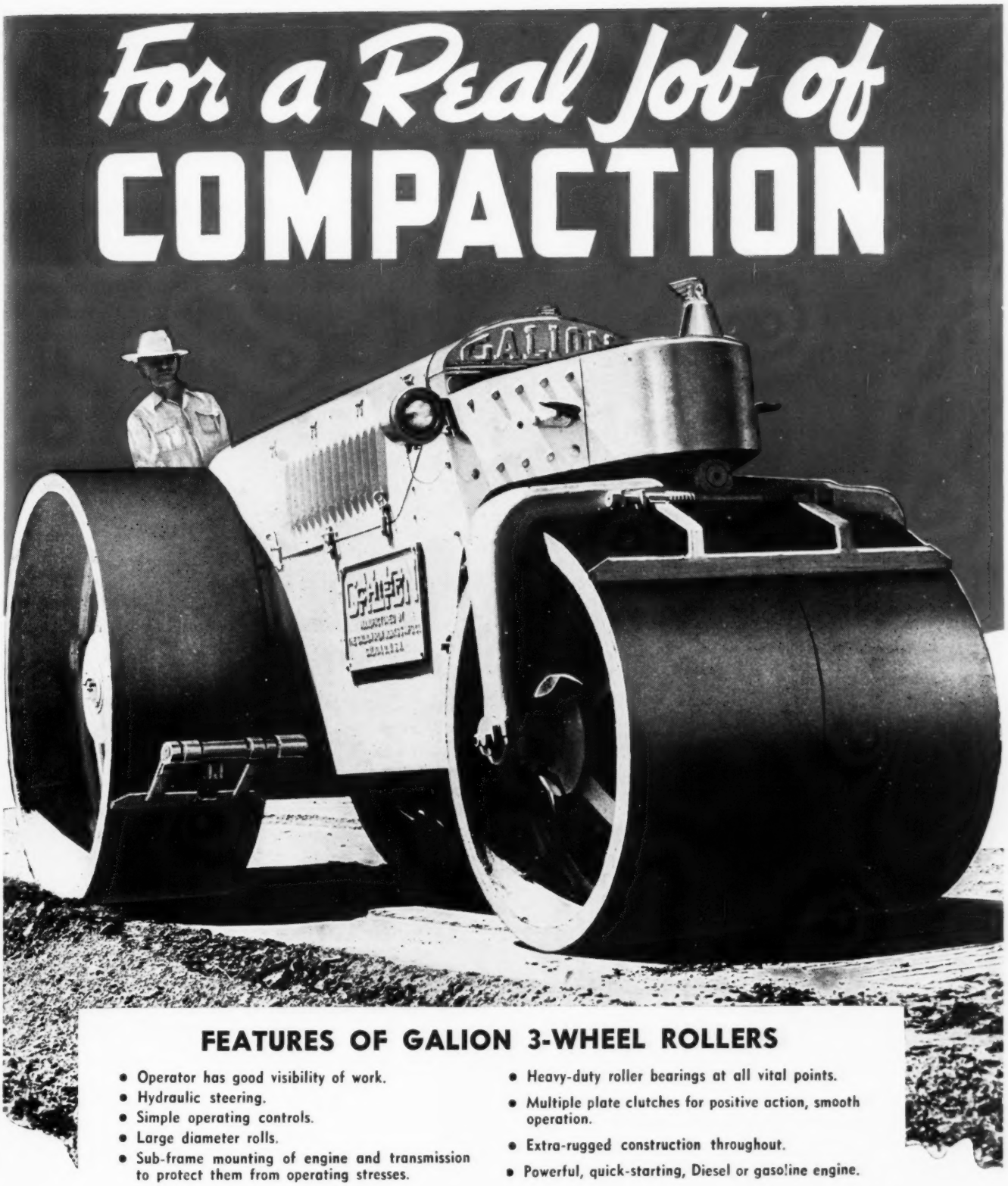
The Foote Co., Inc.
Nunda, N. Y.

The Jaeger Machine Co.
Columbus, Ohio

The T. L. Smith Company
Milwaukee, Wis.

The Knickerbocker Co.
Jackson, Mich.

For a Real Job of COMPACTION



FEATURES OF GALION 3-WHEEL ROLLERS

- Operator has good visibility of work.
- Hydraulic steering.
- Simple operating controls.
- Large diameter rolls.
- Sub-frame mounting of engine and transmission to protect them from operating stresses.
- Heavy-duty roller bearings at all vital points.
- Multiple plate clutches for positive action, smooth operation.
- Extra-rugged construction throughout.
- Powerful, quick-starting, Diesel or gasoline engine.

Write for Catalog No. 294

THE GALION IRON WORKS & MFG. CO.

General and Export Office

GALION, OHIO, U.S.A.

GALION Estab. 1907

GRADERS · ROLLERS

Why heavy-duty fleets keep costs low, performance high with . . . . .

Stanolube HD

MAINTENANCE REDUCED 20%

In start-and-stop fleets, Stanolube HD minimizes cold-engine sludge formation. The all-weather detergent action of this superior heavy-duty motor oil reduces fouling of engine parts.

Example: The Red Top Cab Company, Appleton, Wisconsin, switched to Stanolube HD (and to Standard Oil gasoline and greases). Overall maintenance dropped 20%. Valuable cab time was saved by reduced lay-up for repairs.

OVER 100,000 MILES BETWEEN VALVE AND RING JOBS

Because Stanolube HD is detergent and heat resistant, it keeps rings free and active, protects engines against wear under severest heavy-duty fleet operations. The use of this oil plus good maintenance practice brings low-cost, reliable performance.

Example: Many engines in this large bus fleet of Chicago & West Towns Railways, Inc., have travelled over 100,000 miles before needing ring and valve jobs.

ENGINES FREED OF SLUDGE AND GUM

Stanolube HD holds in suspension various oil contaminants, until they are drained out when the oil is changed.

Example: Quarry trucks and machinery of Everett & Clark, contractors, Plattsburg, Missouri, operate continuously under heavy loads and hot, dusty conditions. For three years Stanolube HD has kept these engines clean, has put a stop to sludge and gum troubles, and has reduced upkeep time and costs.

You can match the fine records of these fleets by using Stanolube HD in your engines. A Standard Oil Automotive Engineer will help you solve any special problems in maintenance and operation. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY (INDIANA) STANDARD

They asked for it... HERE IT IS!

THE NEW WESTINGHOUSE

FLEXARC RANGER

ENGINE-DRIVEN WELDER

- LIGHT WEIGHT
- QUICKLY, EASILY MOVED
- STEPLESS CURRENT ADJUSTMENT
- RUGGED CONSTRUCTION
- WELDS ANYWHERE—ANYTIME

The men who supervise construction in hard-to-get-at spots asked for it . . . and wrote the specifications for it. Westinghouse produced it—a rugged, lightweight welder for rugged terrain. One that can go to work anywhere, any time . . . where electric power is not easily available.

The new Westinghouse engine-driven welder on wheels is smaller, lighter, but with big-welder stamina. Powered by a four-cylinder, 1800 rpm, Hercules industrial engine, the Ranger is designed and built to NEMA standards . . . has a rating of 200 amps, 30 volts, 50% duty cycle, with a welding current range of 20 to 250 amperes. This wide range of welding current adjustment is divided over four overlapping ranges, in each of which stepless current adjustment is obtained by rheostatic control.

Easily transportable on 2-wheel, spring-mounted pneumatic-tired, standard road gauge running gear for road towing *at high speed*. Also available without running gear for stationary mounting.

Here's the welder you've been asking for—built for hard, continuous use on any kind of job. Welder comes complete, with all essential accessories, for immediate welding service. For full details, write Westinghouse Electric Corporation, P. O. Box 2025, Buffalo 5, N. Y.

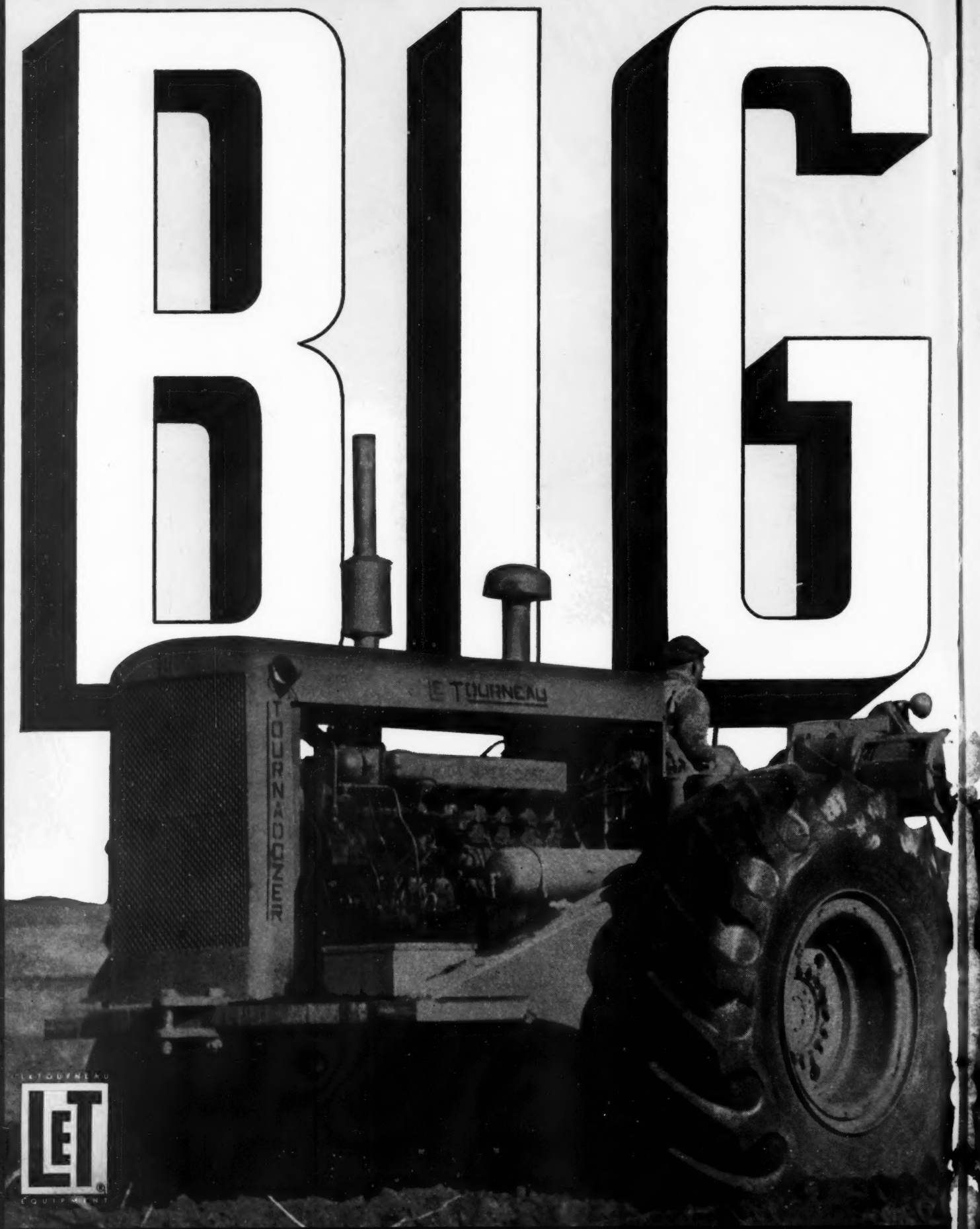
J-21417-3

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

WELDERS AND ELECTRODES

B.I.G



LE TOURNEAU
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EQUIPMENT

TOURNADOZERS

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300 h.p. PUSHER loads up to 29 heaped yds. in less than 1 min.

WITH TODAY'S biggest team of dirtmovers, the B Tournadozer and B Tournapull, you have, for the first time, an ideal combination of BIG matched high-speed dirtmoving equipment. The new B pusher behind the B Tournapull gets big loads fast — up to 29 heaped yards in less than a minute. This dozer has speed and manuverability to synchronize its full 300 h.p. instantly with the 225 h.p. on the Tournapull . . . it's this matched equipment that gives you accurate pushing and cutting control. Both Tournapull and Tournadozer have instantaneous gear selection without shifting . . . both have instantaneous electric controls. Both units drive on big (24.00 x 29) tires built with the new tapered beads and rayon cords to take safely, the tremendous traction developed . . . tremendous loads carried. These new type tires permit low pressure flotation for work in sand and muck. They're interchangeable — from Tournadozer to Tournapull.

You will see this B combination on a lot of the big dirtmoving projects of 1948. It follows the LeTourneau tradition — always seeking to give you better tools for increased production and lowest cost. With this new B Tournapull and B Tournadozer team we can give you a NEW and more profitable "lowest net cost per yard."

See your LeTourneau Distributor now. Ask him to show you how these "B for BIG" LeTourneau dirtmovers can improve YOUR profit possibilitiies for 1948.

Specifications

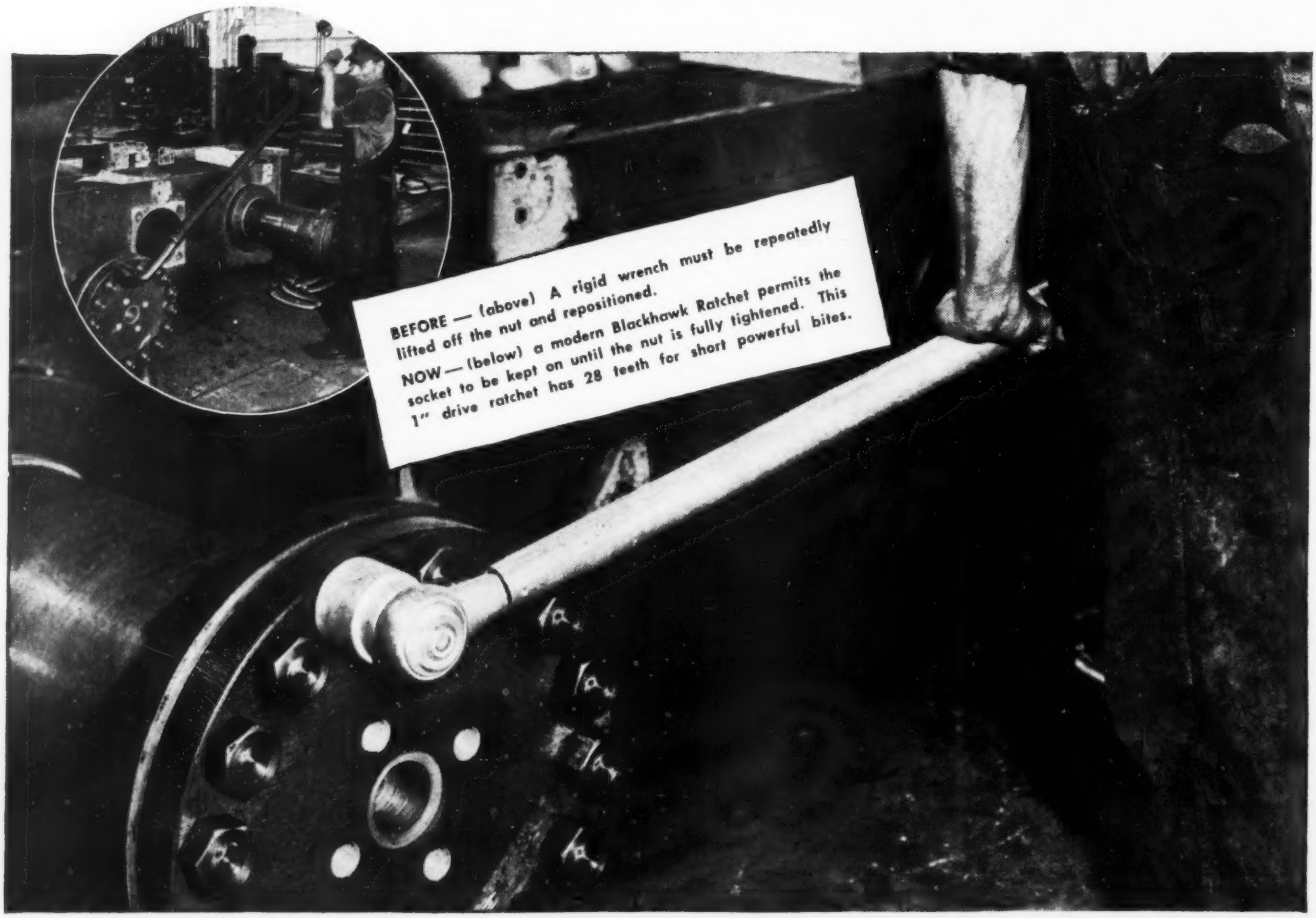
	B TOURNADOZER 300 hp Diesel	B TOURNAPULL 225 hp Diesel
Engine		
Speeds		
1st gear	Fwd. and Rev. 1.6	Fwd. and Rev. 1.88
2nd gear	Fwd. and Rev. 3.3	Fwd. and Rev. 3.75
3rd gear	Fwd. and Rev. 6.8	Forward 7.50
4th gear	Fwd. and Rev. 13.6	Forward 15.00
Tires	24.00 x 29	24.00 x 29
Control	Tournatorque electric	Tournatorque electric
Transmission	Constant Mesh–Tournamatic	Constant Mesh–Tournamatic
Drive	4-wheel	2-wheel
Working Weight	25 tons	22 tons empty
Load Capacity	Blade: 5½ cu. yds. top soil	Scraper: 26 yds. struck (35-ton load limit)

R. G. LeTOURNEAU, Inc.
Peoria Illinois

Tournapull — Trademark Reg. U.S. Pat. Off. G80
Tournadozer, Tournatorque, Tournamatic — Trademark

TOURNAPULLS

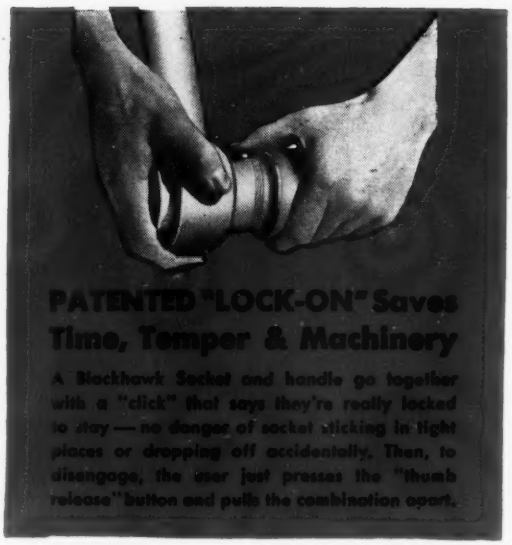
Here's How Blackhawk Socket Wrenches
SAVE 2 HOURS A DAY on this Job


BEFORE — (above) A rigid wrench must be repeatedly lifted off the nut and repositioned.
NOW — (below) a modern Blackhawk Ratchet permits the socket to be kept on until the nut is fully tightened. This 1" drive ratchet has 28 teeth for short powerful bites.

BLACKHAWK'S EXCLUSIVE COMBINATION OF FEATURES SAVE YOU TIME AND MONEY

ONLY Blackhawk Wrenches combine all these features — sturdy, thin walls that let sockets squeeze into tight spots — clean, hot broached sockets for long life and less nut wear—patented thumb release Lock-On for *extra* safety—all the drives to serve the complete range of socket sizes—and a complete assortment of handles and accessories that build up into scores of combinations for *extra* utility. Ask your Blackhawk Industrial Supply Salesman for a Blackhawk wrench catalog — or write us.

A *Product of* BLACKHAWK MFG. CO., Dept. W2328 Milwaukee 1, Wis.



PATENTED "LOCK-ON" Saves Time, Temper & Machinery

A Blackhawk Socket and handle go together with a "click" that says they're really locked to stay — no danger of socket sticking in tight places or dropping off accidentally. Then, to disengage, the user just presses the "thumb release" button and pulls the combination apart.

Always Specify

BLACKHAWK SOCKET WRENCHES

600 cubic feet of wallop

There's more speed in a pair of 4″ wagon drills than you'll ever get with a 500 ft. compressor.

With the 100 additional cubic feet of air from a Jaeger Model 600 you can keep both drills at top efficiency and also power a hand-held drill for secondary work.

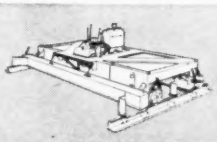
***Adds up to 20% to 30% more daily footage* with the same tools and crew — the lowest cost drilling you have ever done.**

Whether the job requires 60 or 600 c.f.m. of air, companies that know their costs are using "AIR PLUS" precision-built compressors — for fuel economy (Jaeger "Fuel Miser" speed control alone saves up to 32%) — for a steadier supply of cooler air (30% to 50% larger receiver capacity and 100% efficient intercooling) — for a bigger daily output of work and less upkeep cost than any compressor you have ever owned.

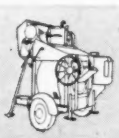
Tops in service, too — distributors in 130 cities sell, rent and service "AIR PLUS" Compressors. See your Jaeger dealer.

THE JAEGER MACHINE COMPANY, Columbus 16, Ohio

REGIONAL OFFICES
1504 Widener Bldg. PHILADELPHIA 7, PA.
226 N. La Salle St. CHICAGO 1, ILL.
American Life Bldg. BIRMINGHAM 1, ALA.



JAEGER Spreaders, Finishers



"SPEEDLINE" Concrete Mixers

"SURE PRIME" Contractors Pumps

JAEGER *Engineered* **EQUIPMENT**

"DUAL-MIX" TRUCK MIXERS, AGITATORS — HOISTING ENGINES, SELF-RAISING TOWERS — CONCRETE AND BITUMINOUS PAVING EQUIPMENT

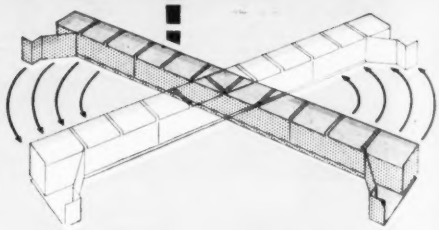
JAEGER announces the TYPE "X"

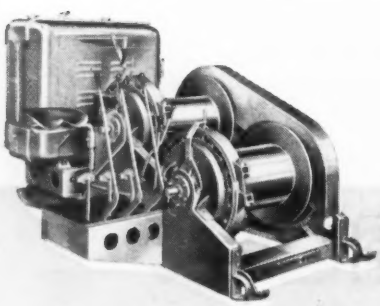
a revolutionary mass-production, labor-saving

Front screed is transverse,

Rear screed is diagonal:

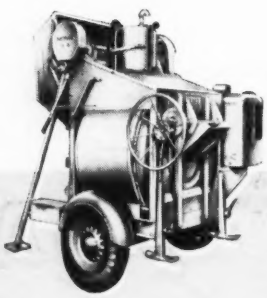
Hand wheel, on operator's platform, quickly swings pivoted screed in either direction to whatever angle best suits the work.





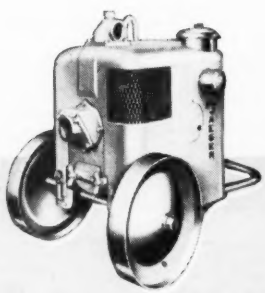
2-SPEED HYDRO-HOISTS

Low-geared for power or high-geared for speed by shifting a lever on automotive transmission. Hydraulic finger-tip control. 29 to



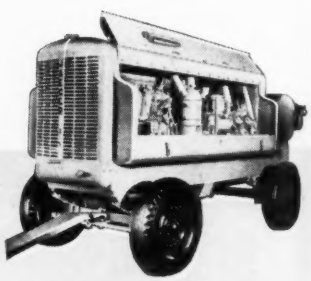
"SPEEDLINE" MIXERS

Fast loading, thoro mixing, fast discharging; speedy trailing. Machined steel drum tracks, automotive transmission. Sizes 3½S, 6S,



"SURE PRIME" PUMPS

Built and powered beyond their guaranteed performance. Portable units in 1½" to 10" sizes, up to 240,000 gph capacity; gas, diesel,



"AIR PLUS" COMPRESSORS

Jaeger-engineered and micro-precision built to deliver more and cooler air per pound of fuel. All sizes, 60 to 600 cu. ft. — gas,

DIAGONAL SCREED FINISHER

tool to work with modern mass-production pavers

faster, more accurate than any transverse finisher . . . finishes flush to higher form when slab is pitched or super-elevated . . . saves up to 2 men on carry-back, requires less hand work and equipment behind the finisher

SOLVES PROBLEM OF FINISHING PITCHED SLAB AND CURVE ELEVATIONS

A true power trowel — where slab is pitched you simply set the rear screed at whatever angle is needed to carry the material uphill and compact it solidly against the upper form. Eliminates or greatly reduces carryback, especially with stiff material; you save one to two shovelers' wages on every job.

MORE ACCURATE THAN ANY TRANSVERSE FINISHER

Because the rear screed operates diagonally to the front screed, it always meets the material at a different point. High spots left by the front screed are sliced off, low spots are filled in, producing a smoother surface than is possible with any one-direction finisher and with less hand work and equipment needed behind the machine.

GREATER CAPACITY TO MATCH ANY PAVER

Because the rear screed works at an angle against the final roll of material and at a wide range of speeds, *all independent of traction*, stiff mixes are more easily finished without tearing. Helps to eliminate extra passes, easily keeps pace with dual drum pavers on half-width as well as full-width slab.

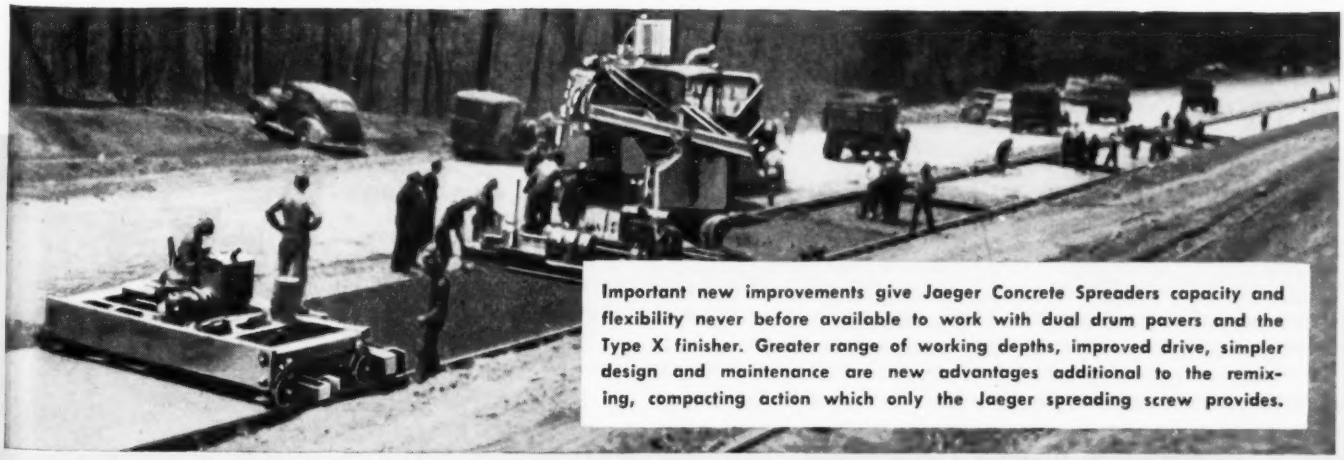
JOB-TESTED FOR 18 MONTHS — NOW AVAILABLE FOR 1948 WORK

10-15 and 20-25 ft. widths with quick crown change screeds standard. See your Jaeger distributor immediately or write for Specification FX-8 giving complete details of the Diagonal Screed Finisher.

THE JAEGER MACHINE CO., Columbus 16, Ohio

Regional Offices: 1504 Widener Bldg., Philadelphia. • 226 N. La Salle St., Chicago 1, Ill. • 235 American life Bldg., Birmingham 1, Ala.

JAEGER *Engineered* EQUIPMENT



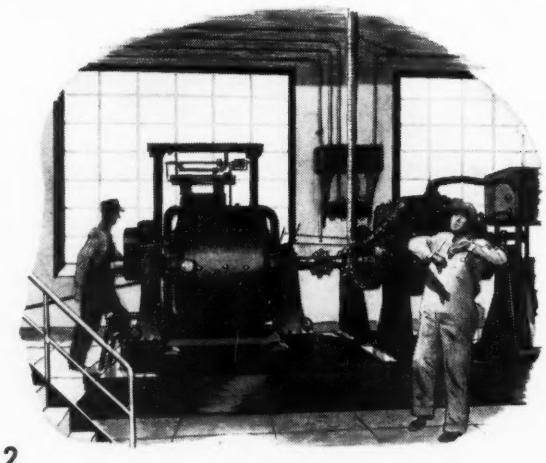
Important new improvements give Jaeger Concrete Spreaders capacity and flexibility never before available to work with dual drum pavers and the Type X finisher. Greater range of working depths, improved drive, simpler design and maintenance are new advantages additional to the remixing, compacting action which only the Jaeger spreading screw provides.

Re-mixing, Compacting Spreaders of increased capacity for mass-production paving

Have a case of shock to cure?

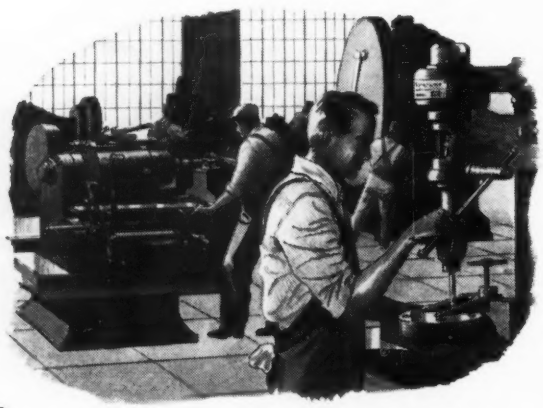
1

"Rev 'er up" is the cry as truck engines roar up to 3000 RPM on giant test stands. It's done to make sure they'll stand the gaff. But occasionally an engine gets ornery — backfires; stops suddenly. Shock! Plenty of it. But what's a backfire to you? Well, what Morse Chain Company did about it may be a boon to *your* business, too . . .



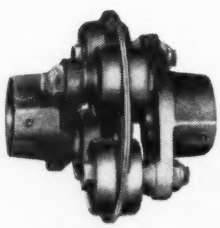
2

Shake, shock and shimmy were the problems Morse Power-Transmission Engineers found on test blocks: a natural for Morse Morflex Coupling. This versatile Morse product absorbs torsional shock, teeth-rattling vibration, and shaft misalignment. Morflex between engines and test blocks reduced bearing wear, protected equipment. This helps you to . . .

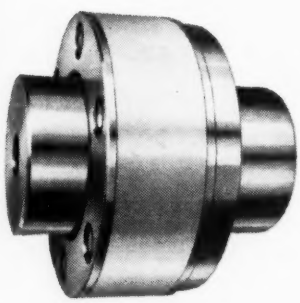


3

Save yourself a headache. Shafts, wheels and machines in your business can be safeguarded. When shaft vibration causes bearing failure it might be prevented by Morflex. *Wherever there is industry* they are adaptable to universal drive connections; allow no power loss; are sealed against dirt and moisture; free of metal-to-metal contact!



Morflex Coupling

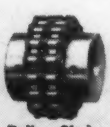


Morflex Radial Coupling

4

Proof of outstanding performance? Call or write Dept. 102, Morse Chain Company, Detroit, Michigan. Hear case histories from experienced Morse Engineers. You'll soon see *how* and *why* Morse Couplings, Roller and Silent Chains, Sprockets and Clutches have been profitably applied by America's foremost manufacturers.

Roller Chain Drives



Roller Chain Couplings

Silent Chain Drives

MORSE

MECHANICAL POWER TRANSMISSION PRODUCTS

A PRODUCT OF B-W BORG-WARNER

Free Wheeling Clutches

MORSE CHAIN COMPANY • DETROIT 8, MICHIGAN

a thousand and one job-proved wire ropes

There's a Macwhyte rope that's the right rope for your equipment.

Macwhyte Wire Rope

Use PREformed Whyte Strand for easy handling and longer service.

Macwhyte Distributors and Mill Depots — carry stocks for immediate delivery. Macwhyte representatives will recommend the correct rope for your equipment. Catalog on request.

MACWHYTE COMPANY

2941 Fourteenth Avenue • Kenosha, Wisconsin

Manufacturers of Internally Lubricated Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies.

Mill Depots: New York • Pittsburgh • Chicago • Minneapolis Fort Worth • Portland • Seattle • San Francisco • Los Angeles

Distributors throughout U. S. A. and other countries.

NOW an EVEN BETTER DISSTON CHAIN SAW

with Mercury Gasoline Engine

ESTABLISHED 1840

REG. U.S. PAT. OFF.

TWO NEW FEATURES ADDED

AUTOMATIC CHAIN LUBRICATION

An improved feature that provides many important advantages.

It has been relocated from tail stock to engine, thus adding extra protection to clutch lever and providing other advantages.

Transmission is lubricated independently from the Automatic Chain Lubricator—thus a wider variety of lubricants are suitable for oiling the chain.

The cam-operated pump develops positive pressure with each turn of sprocket . . . and applies it automatically, in any desired volume, all the way to point of outlet. Flow shuts off, the instant clutch is disengaged. Pressure prevents saw dust and other foreign matter from working into oil line and clogging it.

Flow of oil is constant for any position encountered in felling and bucking.

Will stand up better in service because there are no exposed oil lines to break or mash.

Easy to refill, simple to operate and keep in top working condition.

Can be easily installed on all previous models of the Disston Chain Saw.

CRADLE BALANCED TAIL STOCK

Stronger, more compact, safer . . . Provides better leverage and easier manipulation in cut.

It is designed and shaped to fit the operator's arm . . . the fulcrum being at the front end of tail stock. Thus operator uses the entire body of the tail stock for maneuvering in cut. Note addition of abutment plate which allows upward bucking cuts to be made from the tail stock end.

Completely encased to protect operator's hands . . . no slots where fingers are exposed to cutting chain.

New simplified tensioning device meets individual requirements . . . all degrees, from a very loose chain to one that is 100% tight.

Can be quickly detached should saw get stuck in cut.

Because of simplicity of design, cleaning is easier and quicker.

Made of toughest grade of aluminum alloy and of permanent mold construction throughout, providing greater rigidity.

PLUS THESE DISSTON EXCLUSIVE FEATURES

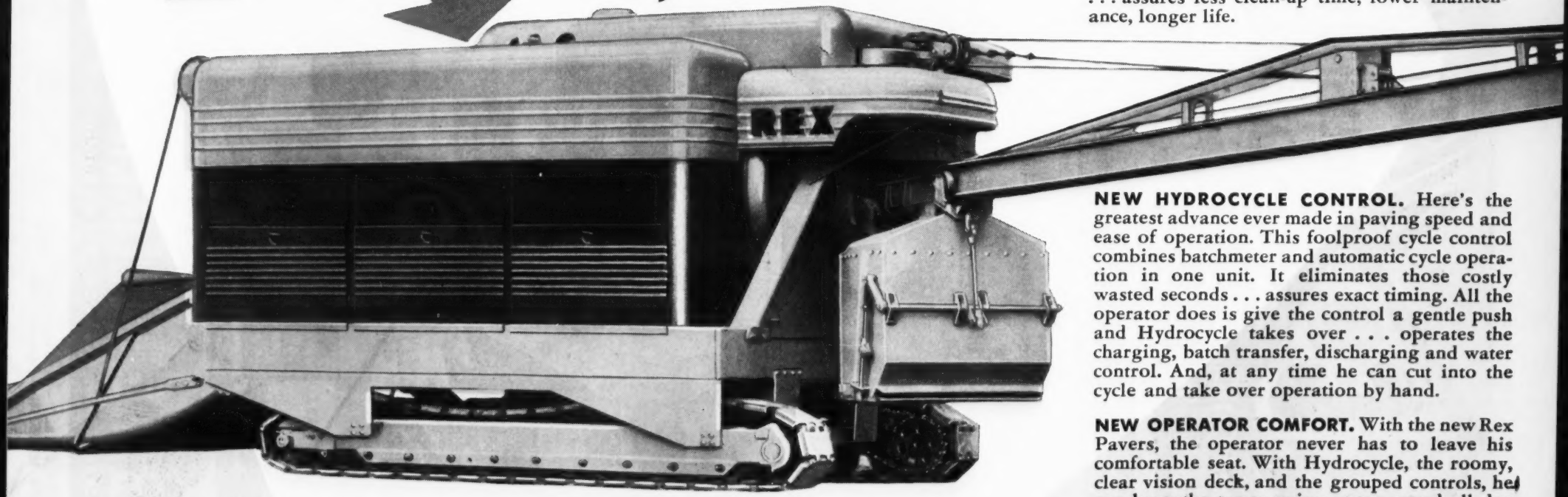
- 11-h.p., 2-cylinder engine, designed specifically for Disston Chain Saw.
- Detachable Air Filter keeps dust from carburetor.
- Die Cast Engine Cylinders.
- Positive-acting, non-slipping, multiple disc clutch.
- Cutting Chain of specially heat-treated Disston Steel.
- Guide Rail of Disston Steel, reversible end for end, top for bottom.
- All Controls within easy reach of operator.
- Built-in Magna-Pull starter, no ropes to wind or lose.

Available NOW. Get in touch with your distributor.

HENRY DISSTON & SONS, INC., 248 Tacony, Philadelphia 35, Pa., U. S. A.

the *new* Rex Pavers

as new inside as they are out!



● 34E SINGLE AND
DOUBLE DRUM PAVERS

CHAIN BELT COMPANY
REX
CONSTRUCTION MACHINERY

● Before you spend your money for a paver for the big road program ahead, check the only basically new pavers in the industry. Rex Pavers are new *inside and out*... from the ground up... field-tested and proved by 4 years of actual experience in the roughest, toughest kind of high speed production. Just look over the new advantages Rex will give you:

NEW ACCESSIBILITY. The new streamlined shielding makes these the most accessible pavers you've ever seen. Big, easy-opening doors permit quick access for lubrication and inspection. And streamlining keeps dirt off the working parts . . . assures less clean-up time, lower maintenance, longer life.

NEW HYDROCYCLE CONTROL. Here's the greatest advance ever made in paving speed and ease of operation. This foolproof cycle control combines batchmeter and automatic cycle operation in one unit. It eliminates those costly wasted seconds . . . assures exact timing. All the operator does is give the control a gentle push and Hydrocycle takes over . . . operates the charging, batch transfer, discharging and water control. And, at any time he can cut into the cycle and take over operation by hand.

NEW OPERATOR COMFORT. With the new Rex Pavers, the operator never has to leave his comfortable seat. With Hydrocycle, the roomy, clear vision deck, and the grouped controls, he can keep the paver going at top speed all day long with far less effort.

AND NEW simplicity of design, new rugged construction, new ease of spreading, new type crawlers . . . there's a whole host of new features it will pay you to check. For all the facts, see your Rex Distributor or write Chain Belt Company, 1664 W. Bruce St., Milwaukee 4, Wis.

PMCO

High Speed Cutting Tools for Expensive Machines

All Purpose SHOVEL
PULLSHOVEL • DRAGLINE
CLAMSHELL

FRONTS, BOTTOMS, SCOOPS and TEETH shown in yellow on buckets are 14% manganese steel developing tensile strength up to 120,000 p.s.i. This high-percentage manganese steel gives tough, rugged strength for hard service and allows wide set corner teeth for easy entrance in digging. Volume production methods enable us to build a better bucket with amazing economies in manufacturing.

Experience Counts. **See your shovel man or equipment dealer about PMCO Buckets and Dippers.**

On the ½ yd. and ¾ yd. Shovel, Pullshovel and Dragline Buckets, all teeth are interchangeable— a great advantage to operators.

Clamshell
Sizes ⅜, ½, ⅝, ¾, 1 yd.

Shovel
Sizes ⅜ to 18 yds.

Pullshovel
Outside Cutter Widths:
21", 26", 31", 36", 39"

Dragline
Perforated Sizes ⅜ yd. to 2 yds.
20%-40% lighter than other makes
Solid sizes ⅜ yd. to 2 yds.
Mine Stripping Sizes 2yds. to 9 yds.

"Quality Since 1880"

PETTIBONE MULLIKEN CORP. CHICAGO 51, U. S. A.

WE OPERATE THE LARGEST AND MOST COMPLETE MANGANESE STEEL FOUNDRY IN THE UNITED STATES

...Le Roi announces the Model 52 Paving Breaker

...its new, easy-holding action packs a wallop that saves you money

Here's a new paving breaker that you must try. Our tests, and they've been tough, indicate that this machine reduces the cost of breaking concrete. The 52 is truly a champion — these features guarantee it:

● **A knock-out punch that puts "high costs" down for the count.** Le Roi's 52 breaker has a happy combination of bore, stroke, valving, and timing that produces its highly effective concrete-shattering blow.

● **Easy to handle.** The 52 weighs 80½ pounds. Overall length is only 29 inches, and handle width 15 inches — operators can move it around with less effort. Rubber hand grips, a new valve action, and an air-cushioned front end minimize vibration. A latch-type retainer makes steel-changing easy.

● **A bear for punishment.** Sturdy drop forgings are used throughout. The throttle valve has a replaceable bronze bushing. The slug-type piston is reversible, a feature that adds many hours of operation to its life. A generous oil reservoir and a new type of lubrication system helps maintain peak operating efficiency — *the 52 is the first breaker to introduce positive shank oiling to increase chuck-bushing life.* A generous bearing giving full support for the full length of the tappet stroke, maintains alignment, and eliminates tappet spalling. A swivel hose connection increases the life of the hose.

● **A miser when it comes to using air.** You can run Le Roi's Model 52 off any standard 60-foot compressor. The 52's new end-seating valve meters the air sparingly without weakening the force of blow — and it actually improves with use, assuring efficient dependability.

The frost will be out of the ground before long — so see your Le Roi distributor about delivery of Model 52's for your spring work.

Write us for literature.

SPECIFICATIONS

Weight, lbs.	80½
Length, inches	29
Width, inches	15
Standard Shank size, inches	1¼ x 6*

**1⅛" x 6" shank also available. Sheeting driver frontheads can be supplied for 2, 2½, and 3-inch piling. Spike driver frontheads are also obtainable.*

LE ROI COMPANY

MILWAUKEE 14, WISCONSIN

NEW YORK • WASHINGTON • CLEVELAND • BIRMINGHAM
TULSA • BUTTE • SAN FRANCISCO

RD-15

Take a round out of pavement-breaking costs with LE ROI'S New 52

ONE-MAN GRAVEL

with two-

GETTER

fisted punch

Adaptable to the operating of many kinds of auxiliary equipment, "Caterpillar" Diesel Tractors keep finding more and more jobs to do—*better, quicker, cheaper.*

With two such valiant helping hands ("Caterpillar" matched Bulldozer and mounted Hystaway dragline crane), the D7 in these California scenes makes gravel digging and truck loading so easy that little experience is required to man the controls. In fact, the operator on this job had never handled any type of shovel or dragline before the day these photographs were taken. The rig is also used for removing overburden.

Users everywhere say: Where there's time to be saved, more work to be done, greater profits to be made, "Caterpillar" is the power and equipment that's most certain to "deliver the goods."

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

• The standard model D7 is priced (without Bulldozer and Hystaway) at $7960, F.O.B. Peoria, subject to change without notice.

CATERPILLAR

REG. U.S. PAT. OFF.

DIESEL ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

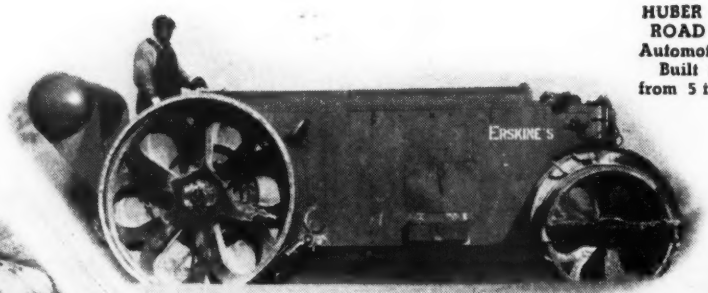
HUBER ROAD MACHINERY

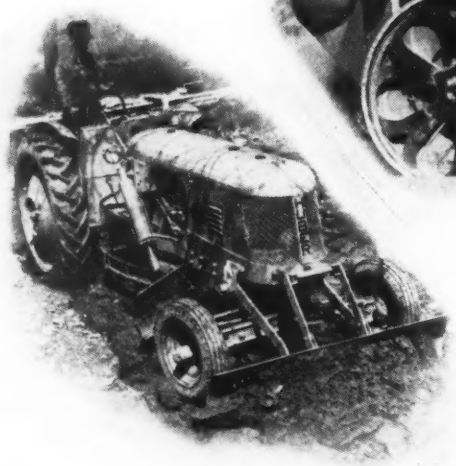
Won't Pull Rabbits out of a Hat . . .

BUT IT WILL PERFORM MIRACLES ON THE JOB

There is no secret behind the low cost operation, dependable performance and long life service of Huber Road Machinery. The answer is – IT IS BUILT FOR THE JOB. The only reason Huber Road Rollers, Tandem Rollers and the Huber Maintainer "performs miracles" on any road construction or maintenance job is because they embody every vital feature that years of experience and "know how" have prescribed as sound. Thus – speed – maneuverability – sturdy construction – simplified controls – fast, smooth operation – accessibility – and many other desirable features are an integral part of every Huber. Consider these things most seriously the next time you buy road machinery. In the meantime, visit your Huber Distributor. He is a good man to know.

HUBER 3-WHEEL ROAD ROLLER
Automotive Type
Built in sizes from 5 to 12 tons.





THE HUBER MAINTAINER
readily converted into a bulldozer, lift-loader, patch roller, snowplow or rotary broom A real time and money saver.

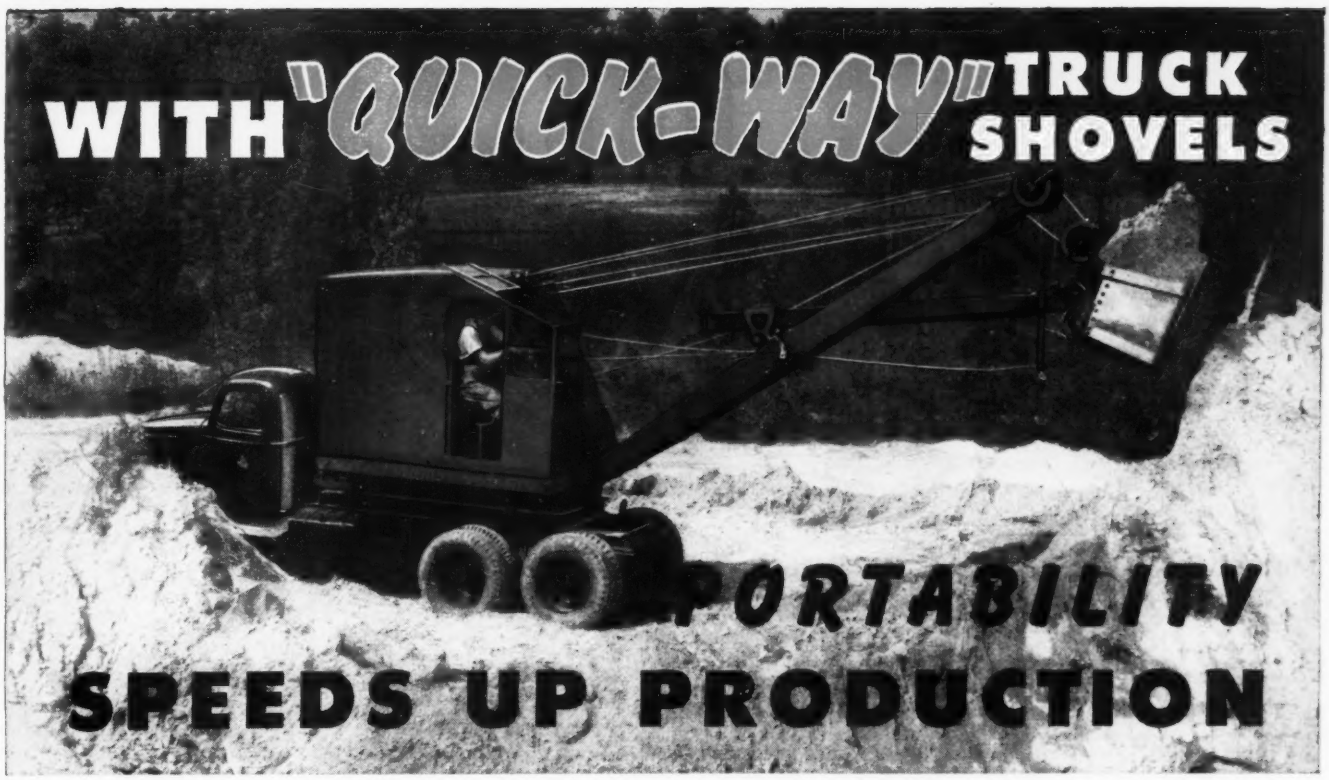
HUBER TANDEM ROAD ROLLERS
Variable weight
Built in sizes from 3 to 12 tons.

THE HUBER MFG. COMPANY • MARION, OHIO, U. S. A.

HUBER

3 Wheel • Tandem ROAD ROLLERS and MAINTAINERS

WITH "QUICK-WAY" TRUCK SHOVELS



PORTABILITY SPEEDS UP PRODUCTION

"Speed on the job and to and from the jobs." That's **"QUICK-WAY"** PORTABILITY. *"QUICK-WAYS"* mount securely on standard motor trucks and travel at truck speeds, on or off the road. *"QUICK-WAY'S"* many attachments make your dollars go farther.

"QUICK-WAY" VERSATILITY—Shovel, crane, dragline, trench-hoe, scoop, clamshell, pile-driver or backfiller, all eight on one chassis.

"QUICK-WAY" CONVERTIBILITY — OPERATING SPEED — Fast hoist and swing action means more material moved per day.

"QUICK-WAY" INTERCHANGEABILITY—Many parts are interchangeable for easier maintenance

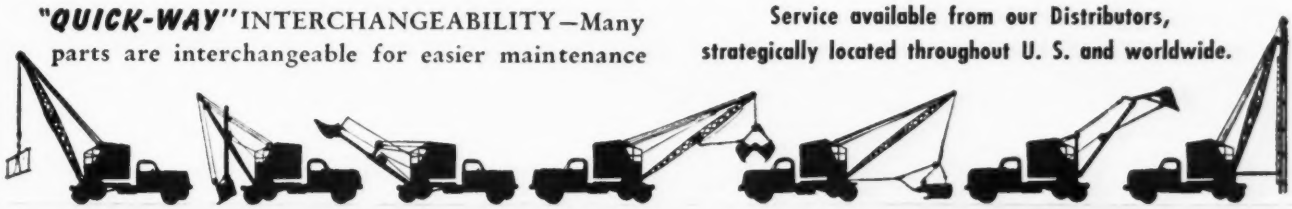
"QUICK-WAY" ECONOMY—Initial investment and maintenance costs are low, production high.

Within reach of the smallest operator as well as the largest. Regardless of what *larger* equipment you own, you need *"QUICK-WAYS"* too. There's a *"QUICK-WAY"* owner near you; ask HIM.

Model E: 4/10 cu. yd. cap. for mounting on any standard 5-ton truck.

Model J: ¼ cu. yd. cap. for mounting on any standard 1½-ton truck.

Service available from our Distributors, strategically located throughout U. S. and worldwide.



For speed, portability, economy of operation, and adaptability to a wider range of jobs, nothing of comparable size equals a "Quick-Way" Truck Shovel.

"QUICK-WAY" TRUCK SHOVEL CO.

DENVER, COLORADO

First to build power shovels for truck mounting; still the leader after 29 years

BOAT SPIKES

Made from new billet steel, Bethlehem Boat Spikes have sharp wedge points, square bodies, and either diamond or button heads. They come in a variety of lengths, and if desired can be furnished hot-dip galvanized to ASTM Specification A-153. Bethlehem also produces dock, wharf, fender and guard spikes in a complete range of styles and sizes.

OTHER BETHLEHEM CONSTRUCTION FASTENINGS

BOLTS AND NUTS — RIVETS
TURNBUCKLES — WASHERS
CLEVISES — TIE-RODS

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

The Job

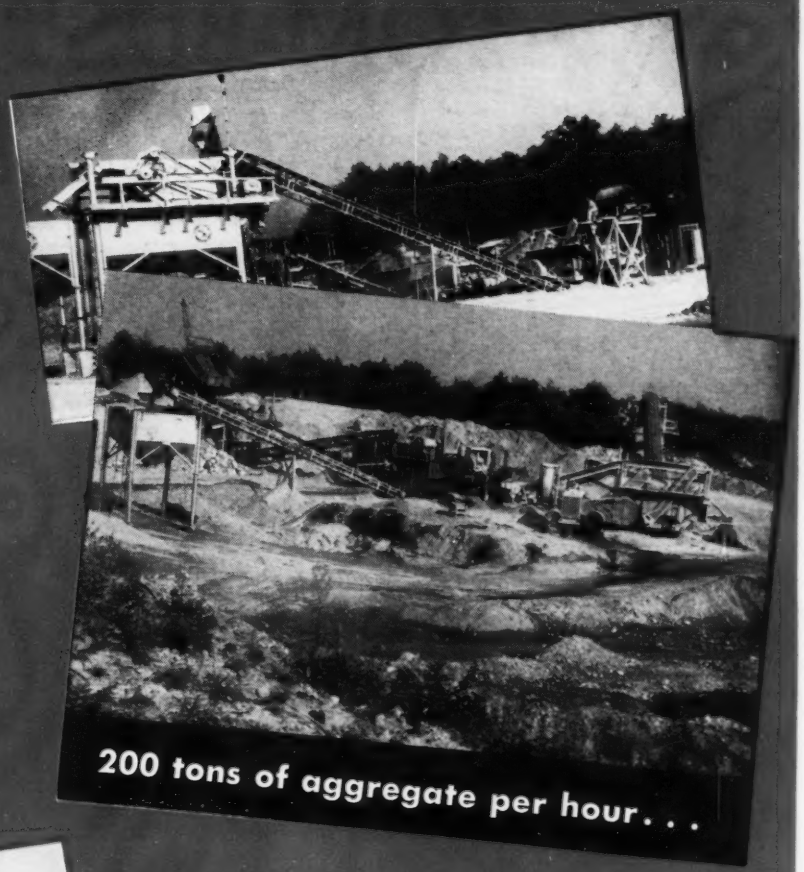
The Maine Turnpike

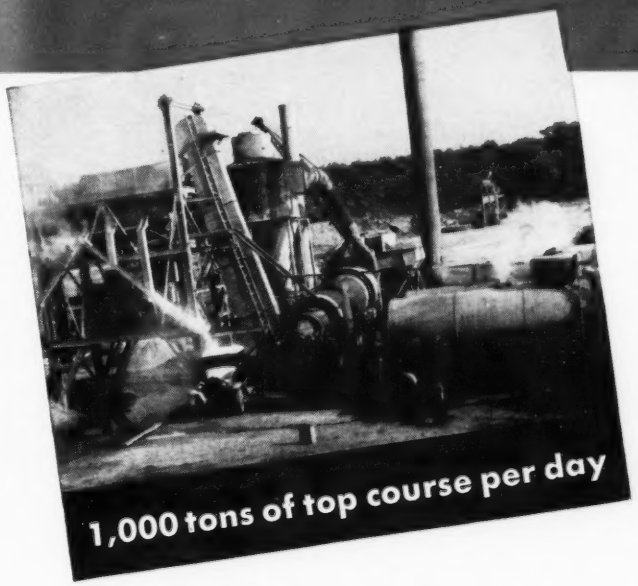
The Equipment

2 Cedarapids Unitized Plants
Cedarapids Model "E" Asphalt Plant

The Contractor

B. Perini & Sons, Inc.
Framingham, Mass.





THE IOWA LINE *of Material Handling Equipment*

PRODUCING the aggregate and mixing the top course of asphaltic concrete for the south half of the Maine Turnpike was the job assigned to two Cedarapids Unitized Plants and a Cedarapids 4,000 lb. Model "E" bituminous mixing plant. And right on schedule the job was done by the Perini organization.

On job after job, you'll find that contractors who know construction equipment best base their bids on Cedarapids production and get the awards. Whether you need 50 tons of aggregates per hour or 200—or more—there's a Cedarapids plant that will meet your requirements. When it comes to black top there's a Cedarapids bituminous mixing plant to meet the most exacting specifications.

And, best of all, you'll know that you'll get your jobs done on time and make a profit because of their high production, and very low maintenance costs.

On your next job use Cedarapids equipment —you'll be way ahead. When you buy aggregate producing or bituminous mixing equipment — buy the best — buy Cedarapids.

Cedarapids

Built by IOWA

PRODUCT OF IOWA

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

ATOM-BUSTER FOUNDATION PREDRAINED BY MORETRENCH

Chicago Times Photo by Borrie Kanter

170-INCH CYCLOTRON

Construction of the accelerator building started the University of Chicago's $12,000,000 nuclear research program. This building will house the world's most powerful cyclotron, a 170-inch giant costing $1,700,000.

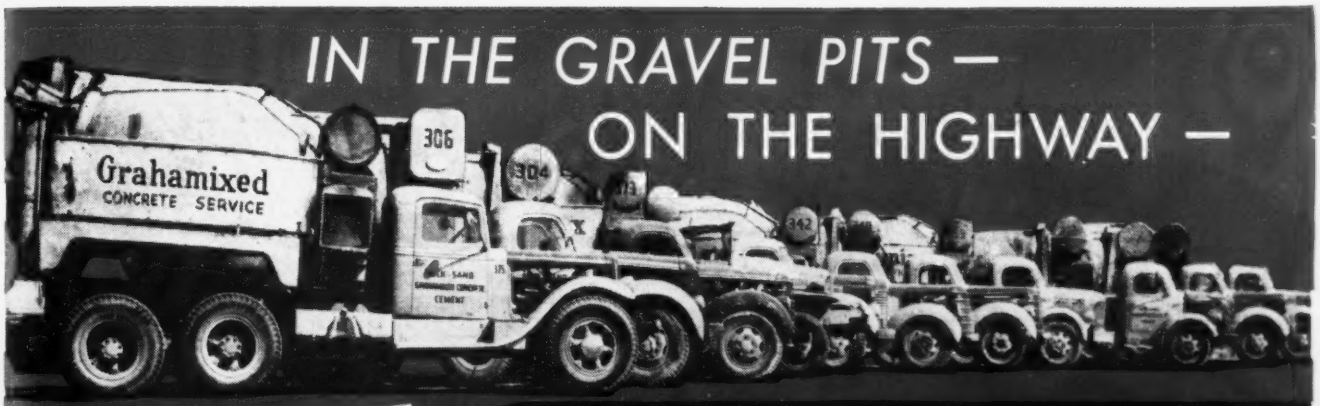
MORETRENCH WELLPOINT SYSTEM

Progress in the excavation for the 35-foot deep foundation began when the Contractor, J. W. Snyder Co., Chicago, installed a MORETRENCH WELLPOINT SYSTEM to lower the ground water level below subgrade —insuring a fast dry start on this important work.

FOR PROGRESS — FOR PROFIT — on any wet job
PREDRAIN WITH MORETRENCH

MORETRENCH CORPORATION

90 West St. New York 6 | 3037 S. Christiana Ave. Chicago 23, Illinois | 7701 Interbay Blvd. Tampa 6, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey



IN THE GRAVEL PITS —
ON THE HIGHWAY —

Tire cost is a major item in our type of operation. For that reason we must hold tire expense to the minimum. We do that by using Firestone All Traction Tires. They are money savers.

PAUL GRAHAM, President
Graham Brothers

IT'S
Firestone
FOR
Graham Brothers of
LOS ANGELES, CALIFORNIA

FIRESTONE builds tires for every load, road and condition of service — tires fitted to the job.

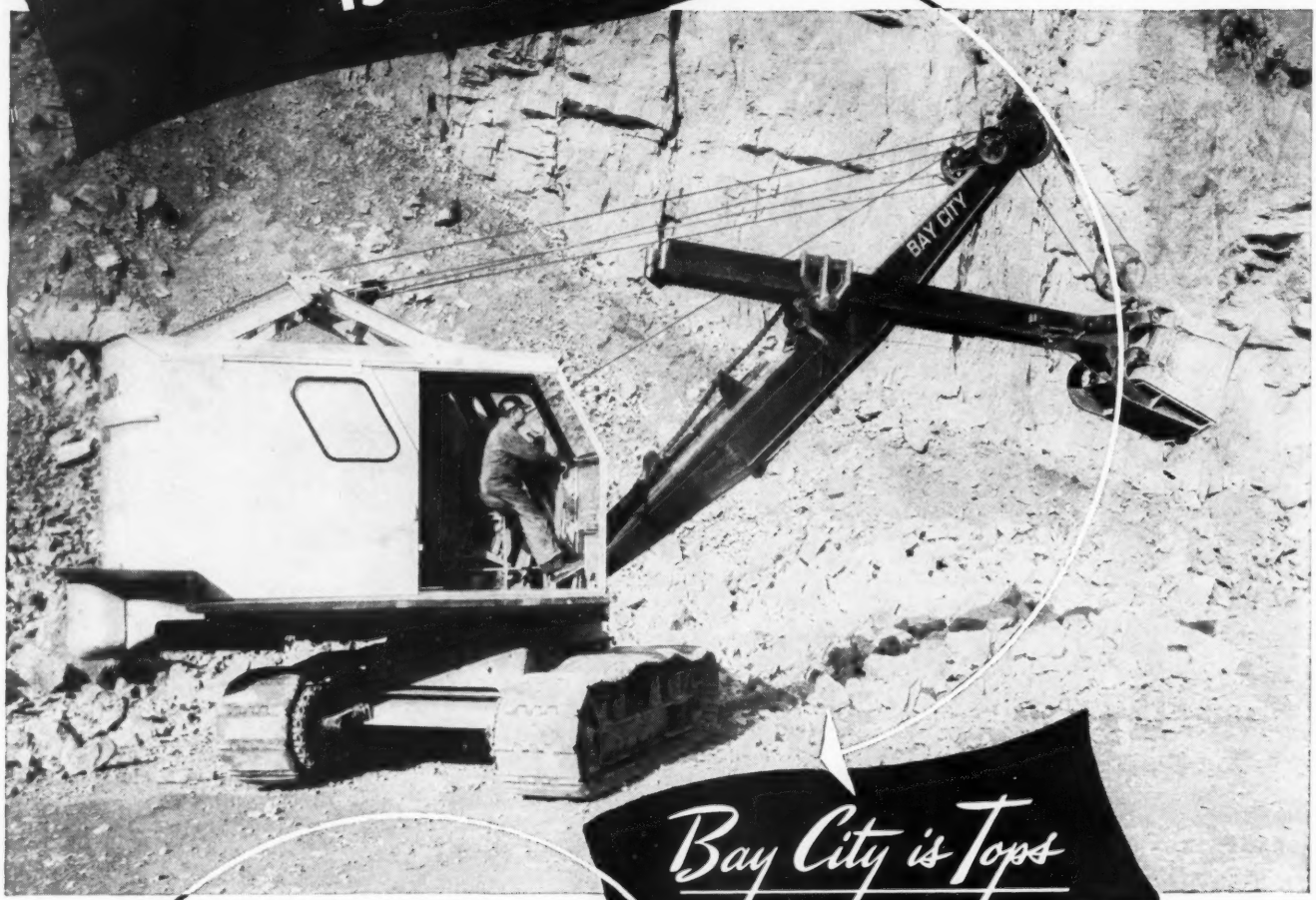
For Graham Brothers in the rock and concrete business in Los Angeles, the tire that fills the bill is the Firestone All Traction. It has the traction for off-the-highway use and the roadability and long life for over-the-highway hauling. And it slashes costs.

The Firestone All Traction will do the same in any hauling operation that demands off-the-highway traction and on-the-highway roadability with long life.

Whatever your hauling job may be you can cut tire costs by equipping your trucks with Firestone Tires fitted for your specific job. Give them a trial. They will prove it.

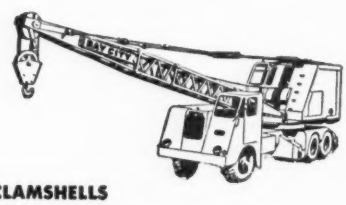
Copyright, 1948, The Firestone Tire & Rubber Co.

WHEN THE GOING IS ROCKY...



Bay City is Tops

No matter how big and tough the rock pile, Bay City performance is always just enough *bigger and tougher to clean up the job . . . fast!* Illustrated is the Bay City Model 65, 20-ton crane, equipped with 1¼ yard shovel, 21′ boom, 16′ handle, and powered by a Cummins HB 1-600 Diesel. For complete particulars and assistance in determining the material handling equipment best suited to your requirements, *see your nearest Bay City dealer or write direct.*



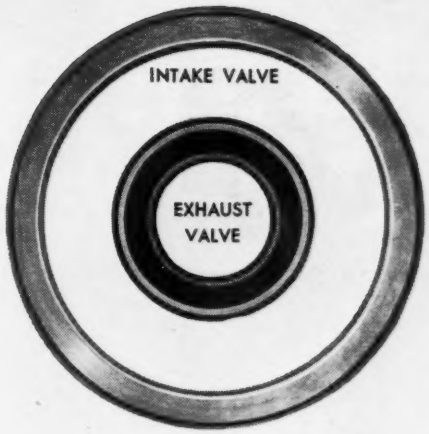
BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

SEE YOUR NEAREST DEALER for Bay City excavating and material handling equipment in sizes from ⅜ to 1¼ yards having crane rating up to 20 tons. Both crawler and pneumatic tire mounting.

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

Davey Valves Assure
PERMANENT PEAK EFFICIENCY



Any compressor will run perfectly when it is new... and will produce its rated air capacity.

The real test of quality comes with increasing age... the manner in which a unit operates after 5-10-15 years of service. This depends 100% on valve efficiency.

In Davey Compressors permanent peak valve efficiency is the result of providing a ready path for heat removal through aluminum alloys. These alloys transmit heat through their mass three times as fast as cast iron.

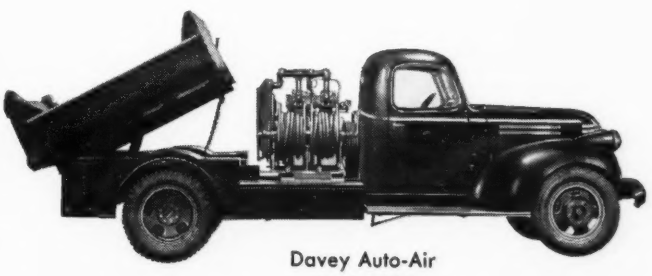
Consequently, Davey units operate at constant peak efficiency—longer and more economically.

Davey is your best compressor investment—both for today and tomorrow. See your Davey dealer now. Ask him to tell you more about Davey valves—also, how vibration has been "engineered out" of the Davey line for '47.

P & P-115

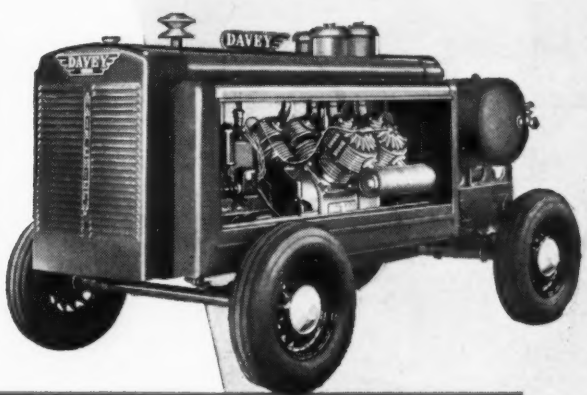
AFTER 13 YEARS of continuous service, these valves were recently removed from a Davey Compressor.* Their peak-efficiency condition is attested by the absence of carbon or pitting. Note how they have obviously seated perfectly—the complete absence of any signs of leakage . . . after 13 years.

**Owner's name on request.*



Davey Auto-Air
Model 105

Davey Air Chief
Model 210



DAVEY

DAVEY COMPRESSOR CO.
KENT, OHIO

EXPERIENCE is The Best GUIDE!

Men who use shovels or similar types of heavy duty material handling equipment, need not be reminded of the important part that wire rope plays in determining their final production costs.

Experience has proved that the longer a rope lasts, the lower is its cost per unit of work done. Less time, too, is wasted in making replacements.

It is *also the experience* of a large number of Wire Rope users that they can depend on Preformed "HERCULES" (Red-Strand) Wire Rope for top-flight performance. Its toughness . . . its easy spooling . . . its unusual endurance — make for longer life, faster work, and lower operating cost.

Our Engineering Department will gladly submit detailed recommendations for any Wire Rope Job! Just ask us.

"HERCULES"* (RED STRAND)
the DEPENDABLE WIRE ROPE for any TOUGH JOB

* REG. U.S. PAT. OFF.

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

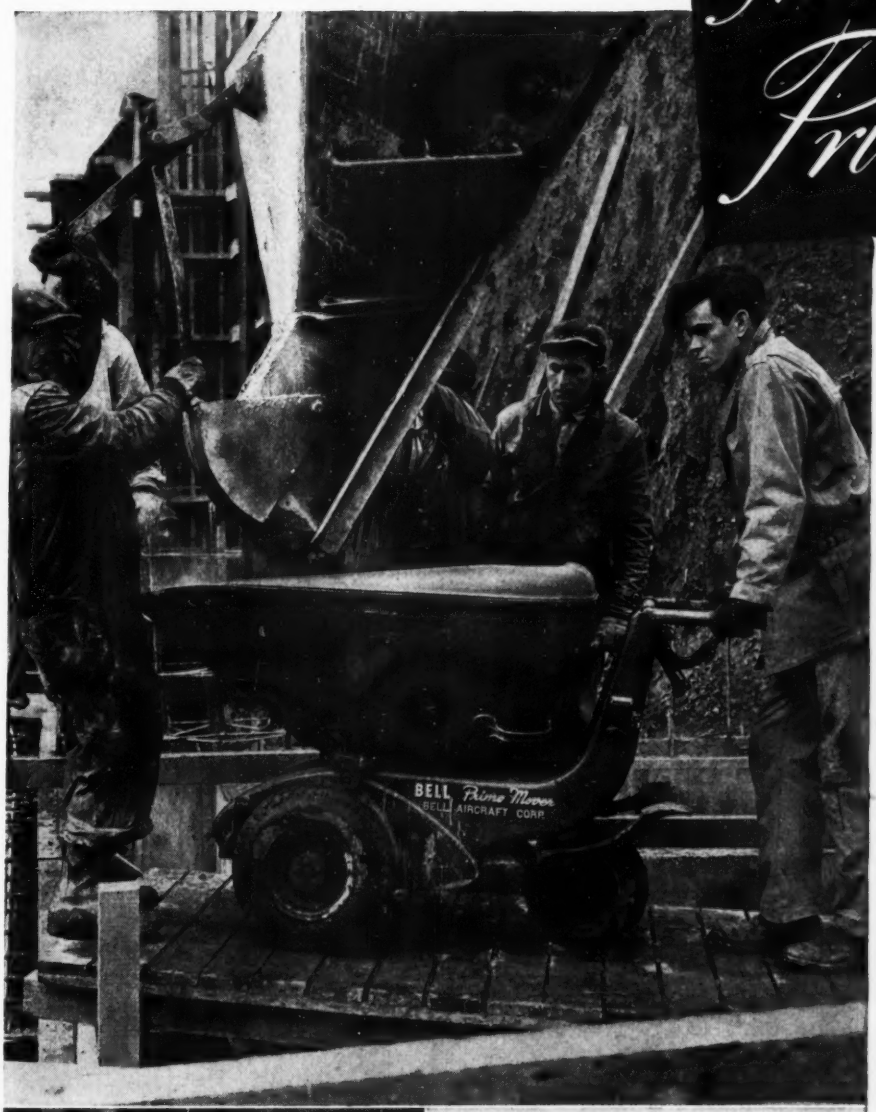
ESTABLISHED 1857

5909 KENNERLY AVENUE • ST. LOUIS 12, MISSOURI

NEW YORK • CHICAGO • DENVER • SAN FRANCISCO • PORTLAND • SEATTLE

CONTRACTORS SAY
"The Wheelbarrow Era has ended"

The BELL Prime-Mover*



Photos courtesy Siegfried Construction Co

You can move more material and move it faster and cheaper with the BELL *Prime-Mover* . . . the new powerized bucket that contractor-users say has ended the "wheelbarrow era."

This ruggedly built, mechanically dumping, power-driven bucket carrier handles wet concrete mix, earth, sand or any other material with a flexibility unobtainable heretofore. It turns in less space than a hand barrow, climbs 20% grades with full load—and with blade attachment it's an efficient snowplow!

Simple operation and full visibility make the *Prime-Mover* safe in any hands. It spares the men too—proved results include reduced fatigue and improved morale along with *increased individual productivity*.

Economy is built-in. No chains or belts—engine, transmission and clutch run in oil, fully enclosed. One 3-gallon tankful of fuel gives 8 hours of continual service. Investigate this new profit-saver.

A PRODUCT OF
BELL *Aircraft* CORPORATION

The NEW Power-Bucket does a 4-MAN job

Ten cubic feet capacity of bucket replaces four wheelbarrows in construction, excavation and other materials-moving jobs. Released by foot pedal, bucket dumps load, then returns to level, locked position. Splash guards prevent slop-over. Half-ton platform body, quickly interchangeable without tools, and snowplow attachment reduce need of special equipment.

SEND COUPON NOW

Bell Aircraft Corporation
P. O. Box 1C, Buffalo 5, N. Y.

Please send me engineering and cost data on the *Prime-Mover*, including operating experience in ..... (type of work).

Name .....

Company .....

Address .....

City, Zone & State .....

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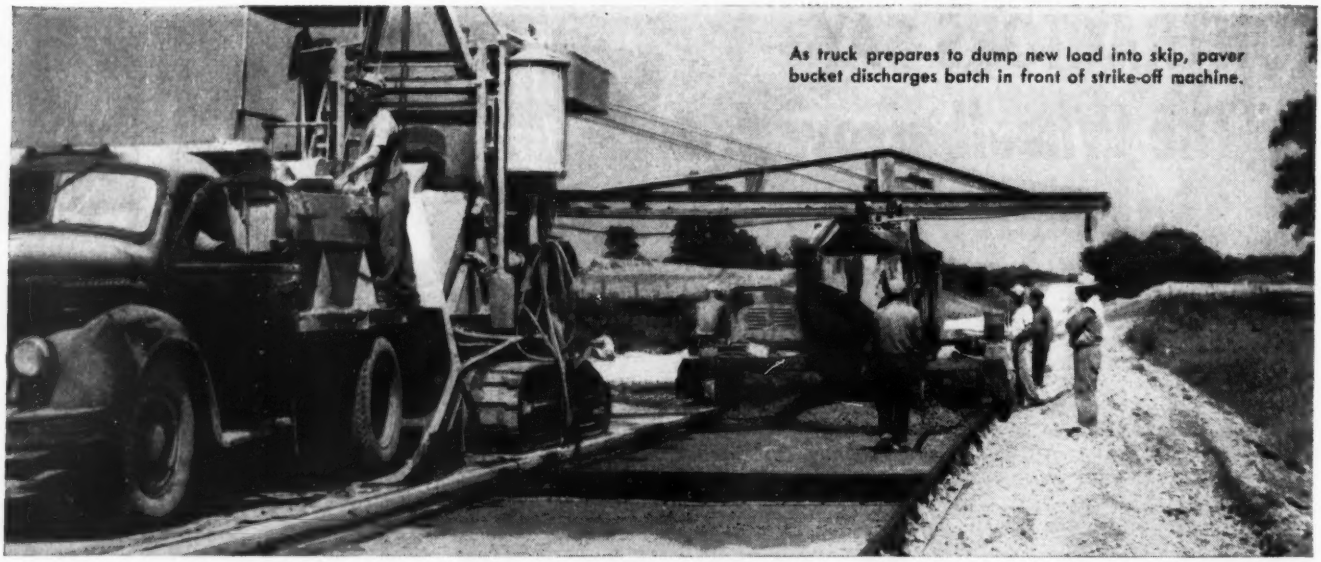
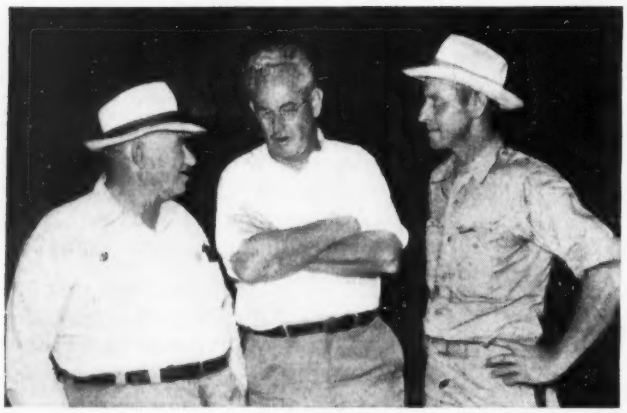


As truck prepares to dump new load into skip, paver bucket discharges batch in front of strike-off machine.

Philadelphia-Harrisburg Highway Undergoes Repair



John S. "Jack" Anderson (center), Hempt Bros. superintendent, chats with R. A. "Ike" Moore (left), resident engineer, Penna. Dept. of Highways, and Merle Elicker, Hempt Bros. foreman.

Taking a bite out of a hill. Dipper has a busy time loading shale into dump trucks and tractor-towed dump wagons.

Resurfacing, widening and relocation are three major repair jobs now taking place at various points along U. S. 422, through route from Philadelphia to Harrisburg. These recent construction scenes show one of the relocation jobs—a 4.6-mile double-barreled stretch of road between Lebanon and Myerstown. Contractor, Hempt Bros., Camp Hill, Pa. Bar mats, road joints, reinforcing bars and guard rail were furnished by Bethlehem.

Installing dowel caps on bar-dowel unit. Joint is designed to minimize load-transfer problems caused by heavy wheel loads.

With finishing machine standing by, Bethlehem Hinged Bar Mat is lifted into place. Two men handle mat with ease.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

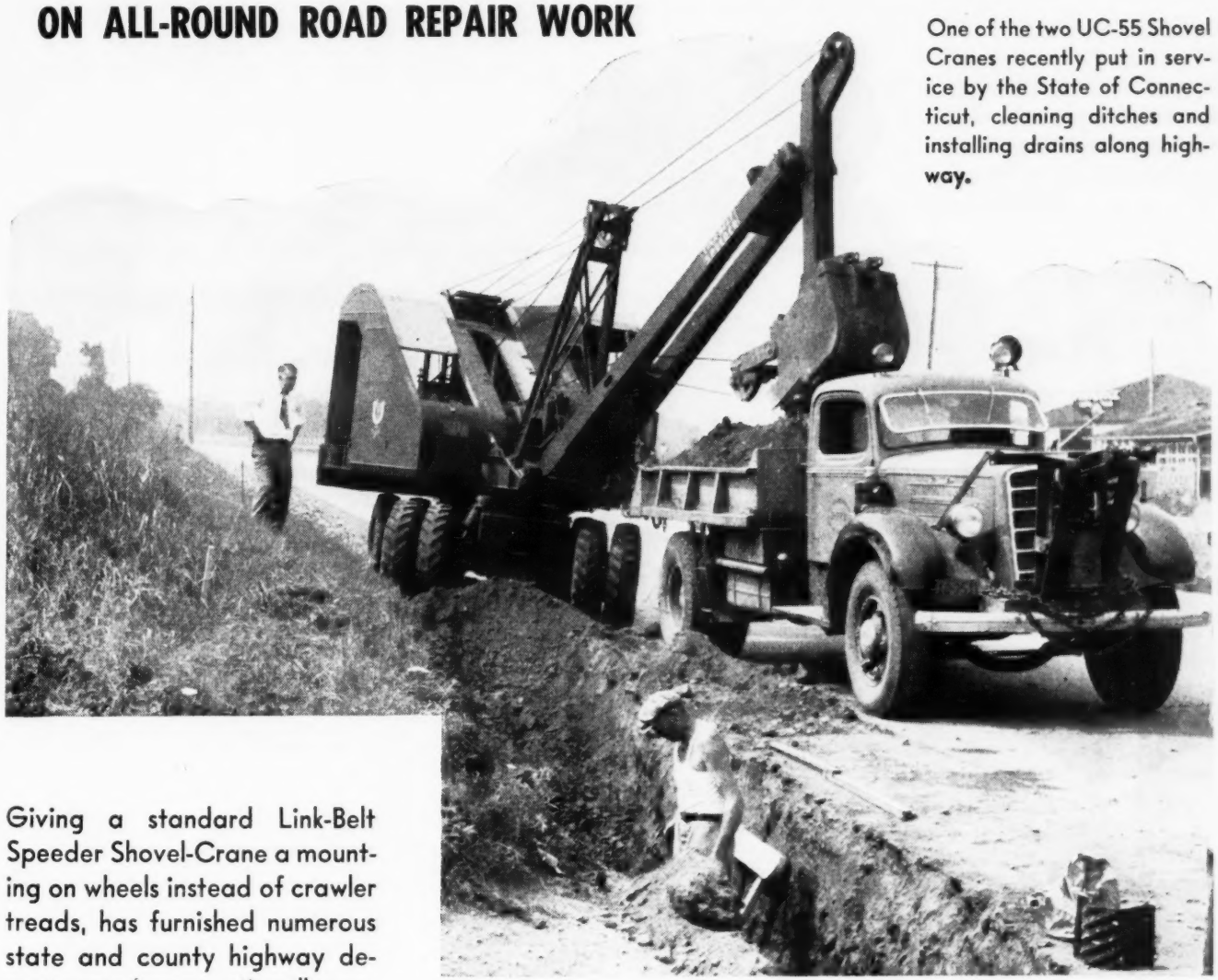
LEADING BETHLEHEM HIGHWAY PRODUCTS
Road Joints • Reinforcing Bars • Bar Mats • Guard Rail
Tie-Rods • Guard Rail Posts and Brackets • Spikes
Wire Rope and Strand • Hollow Drill Steel
Fabricated Structural Steel • Bolts and Nuts
Sheet and H-Piling • Timber Bridge Hardware

BETHLEHEM STEEL

STATE HIGHWAY DEPARTMENT *Chooses*

WHEEL-MOUNTED SHOVEL-CRANES GIVE GOOD ACCOUNT OF THEMSELVES ON ALL-ROUND ROAD REPAIR WORK

LINK-BELT SPEEDER



One of the two UC-55 Shovel Cranes recently put in service by the State of Connecticut, cleaning ditches and installing drains along highway.

Giving a standard Link-Belt Speeder Shovel-Crane a mounting on wheels instead of crawler treads, has furnished numerous state and county highway departments an exceptionally useful tool for all kinds of road construction, maintenance and repair work. Quickly converted from shovel to trench hoe, or to dragline, pile driver or clamshell, it is not only capable of performing the widest variety of operations, but it is able to get from one job to another in the shortest time, and therefore can keep busy more of the time.

The UC-55 is one of the twenty-five models of Link-Belt Speeder shovel-cranes, ranging in size from 3/8 to 3 cu. yd. capacity, wheel or crawler-mounted, offering a type and size to meet every requirement of contractors and road builders.

Your nearby distributor has a stock of parts and a staff of men trained in the servicing of Link-Belt Speeder Shovel-Cranes. Ask him for a demonstration of the versatile wheel-mounted UC-55.

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of SHOVELS-CRANES-DRAGLINES

10,971

"is it fun to be fooled?"

We don't think so . . . not when it comes to paying out hard-earned dollars for equipment. As manufacturers, we don't like to be fooled in our purchases of machinery and materials. We prefer to *know*. And we want you to know!

This is the reason why we have formed the Truck Mixer Manufacturers Bureau . . . an organization founded on service to you. We have set up certain standards that must be met by each and every truck mixer. The Bureau rating plate, prominently displayed on a truck mixer, is your assurance of full rated capacity . . . your protection against "outlaw sizes." Conversely it is our protection against the loss of your "good will" . . . of the loss of your confidence in our product through inaccurate capacity ratings.

2 CUBIC YARD MIXER
GUARANTEED TO HOLD, MIX AND AGITATE ITS RATED CAPACITIES AND CERTIFIED TO COMPLY WITH TRUCK MIXER MANUFACTURERS BUREAU STANDARDS AS APPROVED BY N.R.M.C.A.
NRMCA
3 CUBIC YARD AGITATOR
N.R.M.C.A. REGISTRY Nº

Truck Mixer Manufacturers Bureau

Affiliated with The National Ready Mixed Concrete Association

BLAW-KNOX DIVISION Pittsburgh, Pa.	CONCRETE TRANSPORT MIXER CO. St. Louis, Mo.	RANSOME MACHINERY COMPANY Dunellen, N. J.
CHAIN BELT COMPANY Milwaukee, Wis.	THE JAEGER MACHINE COMPANY Columbus, Ohio	THE T. L. SMITH COMPANY Milwaukee, Wis.

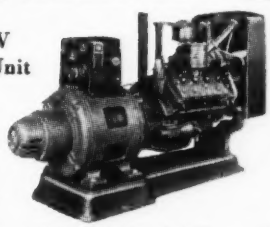
KRW INDUSTRIAL POWER PLANTS

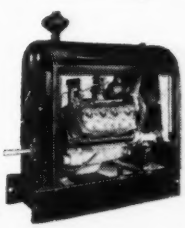
CUT COSTS 40-50% . . . THIS NEW BOOK GIVES ALL FACTS ABOUT THESE FAMOUS LOW COST FORD-POWERED, EASILY SERVICED UNITS . . . THOUSANDS IN DAILY USE

Write for it today!

CUT POWER OR PUMPING COSTS IN HALF WITH
KRW INDUSTRIAL POWER UNITS
DEPENDABLE ECONOMICAL FORD POWER
KRW UNITS operate on GASOLINE, NATURAL GAS, BOTTLED GAS
OPERATING COSTS PER HOUR
THE 100-H.P. FORD V-8

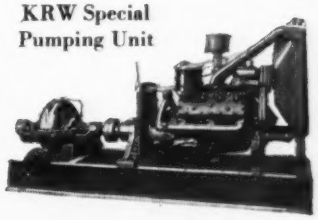
KRW 20KV Generating Unit





KRW Industrial Power Unit (enclosed type)

KRW Special Pumping Unit



● **Powered by the famous Ford V-8—100 H. P. Truck Engine, KRW Industrial Power Units operate on Gasoline (tax free), Natural Gas or Butane. Their maintenance and repair cost is held at a minimum because of around-the-corner and world-wide, low-cost Ford service and the Ford Engine and Parts Exchange Plan. Mail the coupon for this informative book today.**

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BUFFALO 3, NEW YORK

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K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

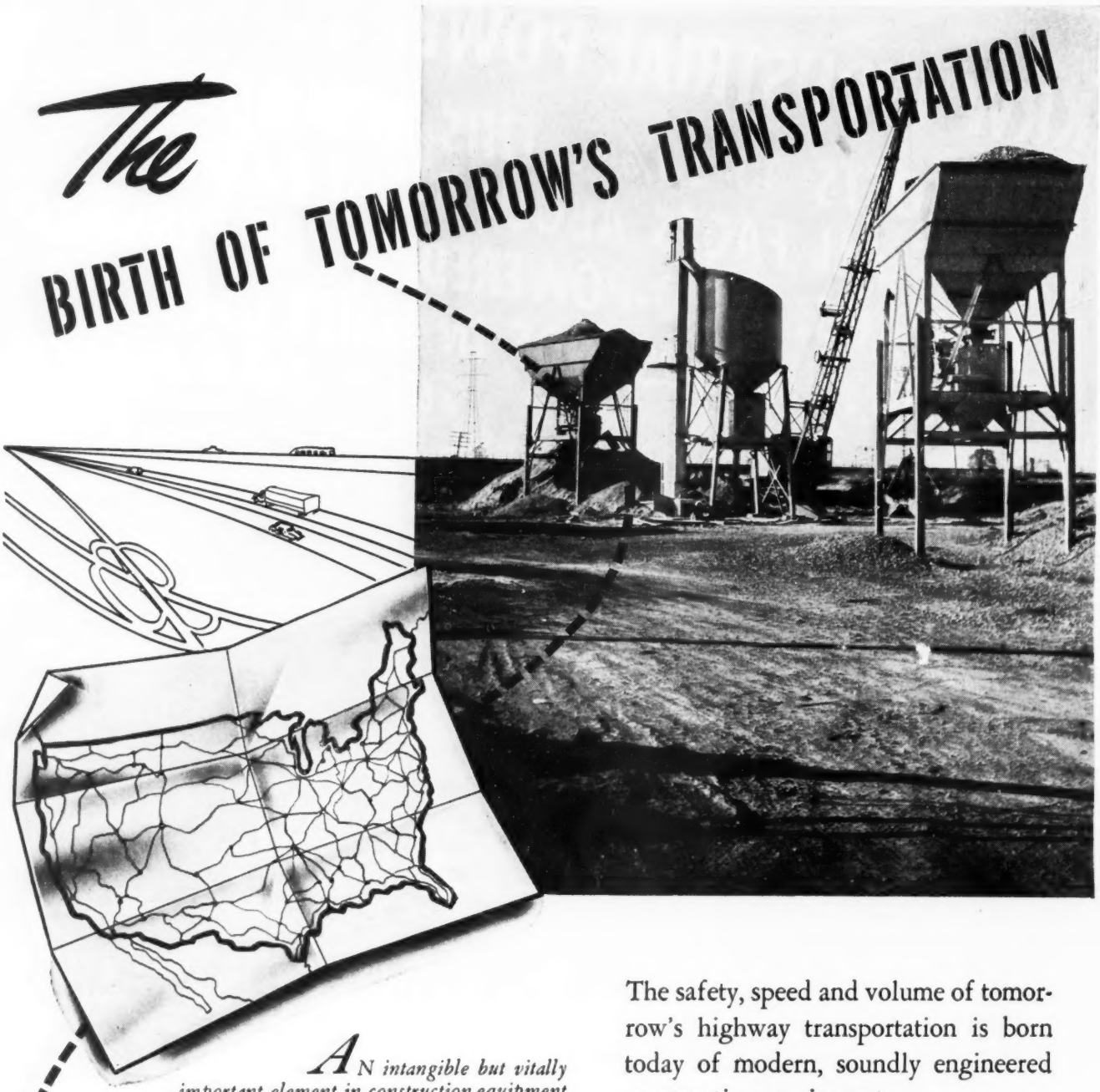
Please send me a copy of the new KRW Industrial Power Unit Book.

Name .....

Address .....

City and Zone ..... *State* .....

The BIRTH OF TOMORROW'S TRANSPORTATION



AN intangible but vitally important element in construction equipment is the engineering which gives it structural strength, economical operation and long-life. But Butler Engineered Design goes farther: The site, the size and type of work, accessability of materials, their volume and their transport are all given careful study and are reflected in the greater efficiency of Butler Construction Equipment.

The safety, speed and volume of tomorrow's highway transportation is born today of modern, soundly engineered construction equipment.

Long delayed and long anticipated, the gigantic road construction program will soon demand unprecedented manpower, materials and equipment. The existing highways are inadequate; vast, new networks will be added.

When the program starts it will start like an avalanche. Primary demand will be equipment, and to the contractor who has it will go the great awards. Are you ready? Consult the Butler Engineer.

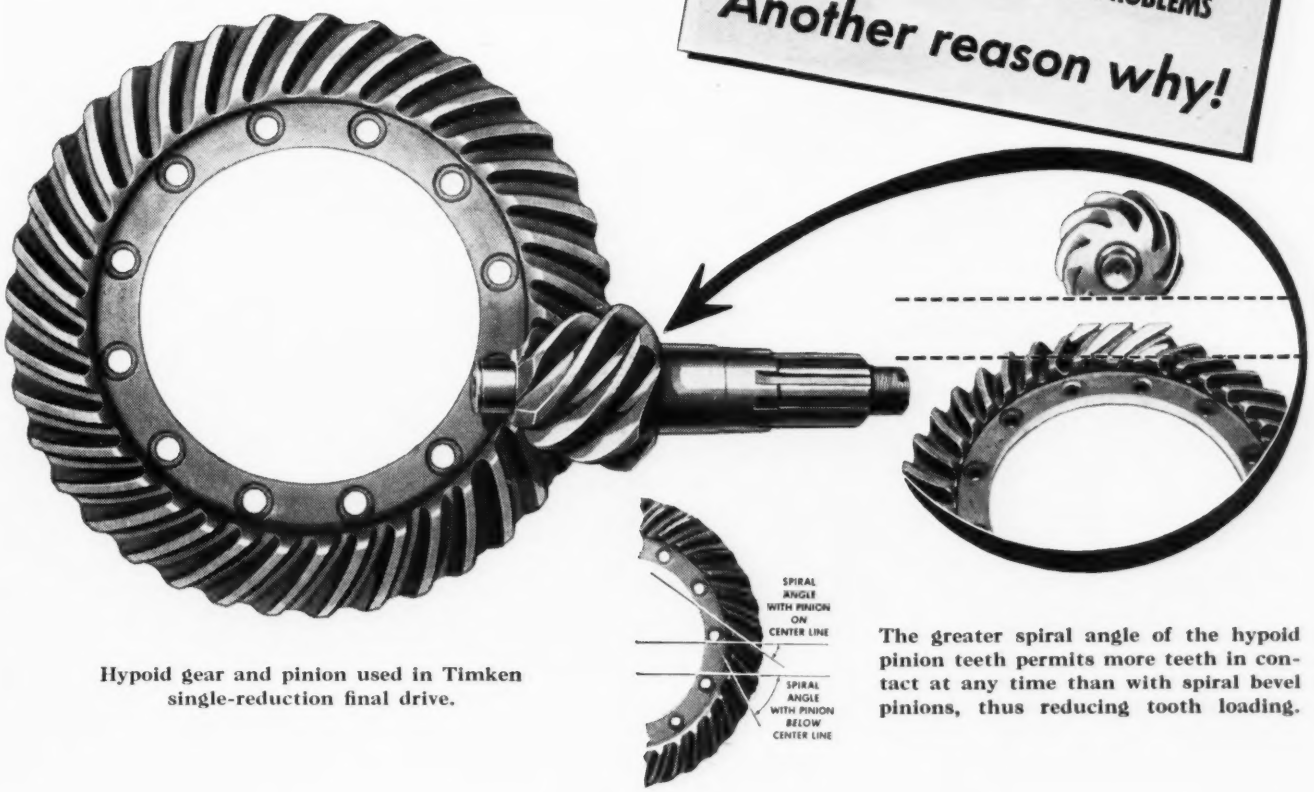
BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

HYPOID!
FOR HY-PERFORMANCE

TIMKEN 3 for 1 AXLES

THE FINAL ANSWER TO FINAL DRIVE PROBLEMS

Another reason why!



Hypoid gear and pinion used in Timken single-reduction final drive.

The greater spiral angle of the hypoid pinion teeth permits more teeth in contact at any time than with spiral bevel pinions, thus reducing tooth loading.

Hy-Performance Hypoid Gearing is here! . . . in new Timken "3 for 1" Axles!

Not in just one or two axles, but in a *complete new line!*—in a *complete range of capacities!*—and in *all three types of final drives:* Single-reduction, double-reduction, and two-speed double-reduction.

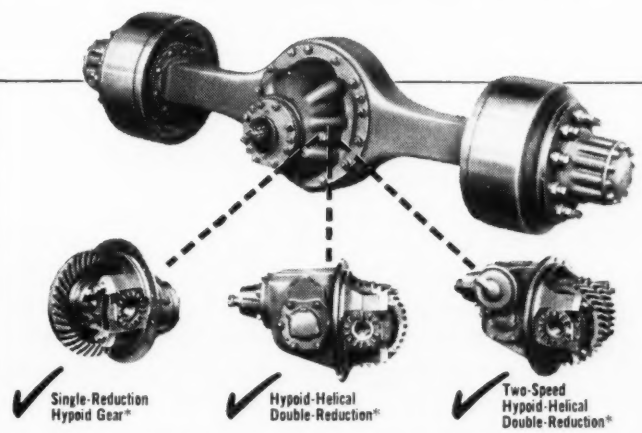
Here's how hypoid is basically different—basically better:

The offset location of the hypoid pinion, combined with the greater spiral angle of the pinion teeth, results in a pinion and shaft that are larger in diameter and therefore stronger. The greater spiral angle of the hypoid pinion teeth permits more teeth in contact, thus reducing tooth loading.

The larger diameter of the hypoid pinion makes practical higher numerical gear ratios, which are difficult or impractical to obtain with spiral bevel pinions because their diameter becomes too small.

Now, every truck from medium to heavy-duty capacity can have the proved economy, durability and dependability of Timken Hypoid "Hy-Performance" gearing.

Look *under* the new trucks you buy! Specify Timken "3 for 1" Axles.



*INTERCHANGEABLE IN SAME AXLE HOUSING USING THE SAME AXLE SHAFTS

TIMKEN
3 for 1 AXLES

THE TIMKEN-DETROIT AXLE COMPANY
DETROIT 32, MICHIGAN
WISCONSIN AXLE DIVISION, OSHKOSH, WISCONSIN
TIMKEN AXLE BRAKE DIVISION, DETROIT, MICHIGAN

Only ADNUN BLACK TOP PAVERS give you these *Extra* Job possibilities!

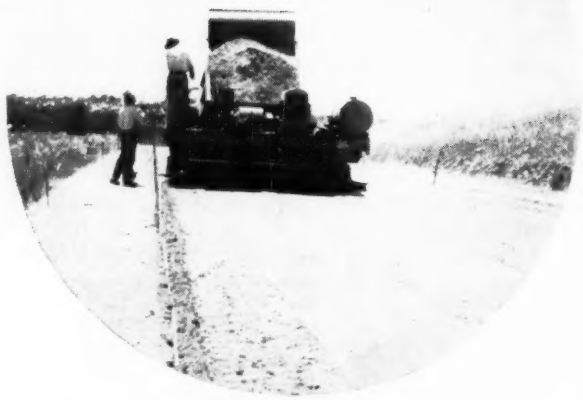
ABOVE—*Laying a four-inch course of No. 1 rock with an Adnun. Rock passes 4-inch screen, retained on 2-inch . . . An extra, profitable job for any Adnun!*

ABOVE—*Putting down base course for another smooth, Adnun-laid highway. Only Adnun has Continuous Course Correction feature for smoothing subgrade irregularities out of succeeding courses. Note retractable wheels for fast, easy between-jobs travel.*

ADNUN Black Top Paver ability goes far beyond precision laying of all types of black-top mixes at big volume rates. With an Adnun you can add extra job possibilities that mean more machine time on profitable work for you: Laying stone, slag or gravel courses . . . Laying soil cement and all types of built-up subgrade material.

In action, on any of these materials, Adnun hydraulic controls of all main paver functions, four-wheel-drive, power cutoff, and powerful six-cylinder engine make it easy for one man to get real paving results on a high output basis.

Adnun's rugged, cross-braced construction is made to take the pounding of heavy trucks for years of low-cost operation and maintenance. For the complete Adnun story, call your Adnun Representative, or write direct for illustrated Adnun Bulletin.

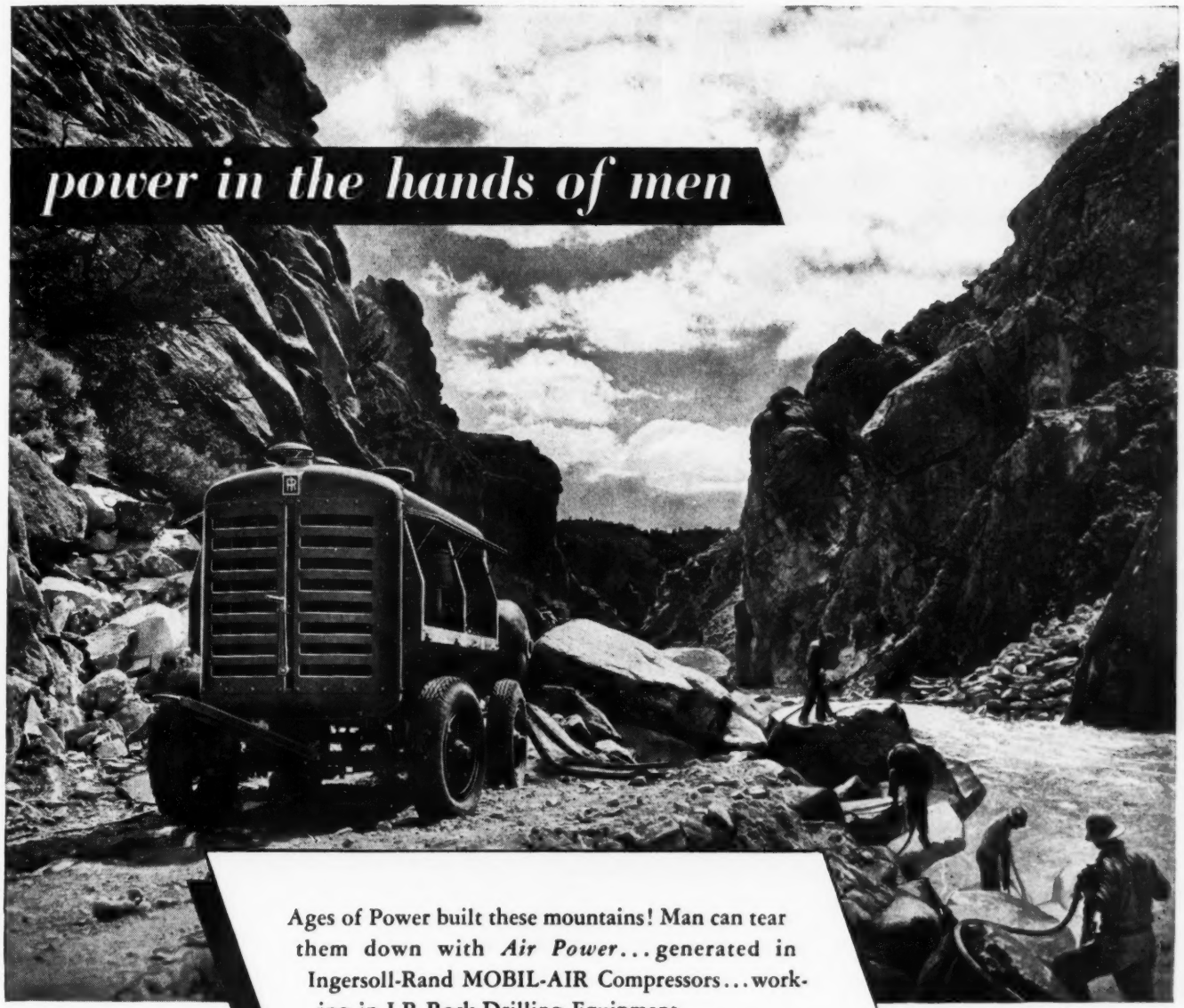


IN CIRCLE—*Laying a 10-inch course of subgrade aggregate to finished surface accuracy. A fast Adnun operation that makes finishing easier; completed roads smoother, longer-lasting.*

THE FOOTE CO., INC.
1910 State Street Nunda, New York

ADNUN
TRADE MARK REGISTERED
BLACK TOP PAVER

BUILDERS OF FOOTE KINETIC MIXERS, MULTIFOOTE CONCRETE PAVERS, AND ADNUN BLACK TOP PAVERS



Ages of Power built these mountains! Man can tear them down with *Air Power*... generated in Ingersoll-Rand MOBIL-AIR Compressors... working in I-R Rock-Drilling Equipment.

MOBIL-AIR brings you *extra power,* the result of recognized MOBIL-AIR *quality* developed through years of creating and building out-in-front portable compressors that have always set the new standards of comparison... more air with less fuel, lower maintenance, easier to operate, greater dependability.

Today's MOBIL-AIR is stronger, sturdier, tougher, and better in every way. It is equipped with Drill-More Capacity Control, too. This gives your drills *more drill power,* makes your compressors last longer, and saves fuel.

That's how the new KA-Series MOBIL-AIR puts another kind of power into your hands... *the power to increase your profit.*

Ingersoll-Rand MOBIL-AIR AIR POWER

COMPRESSORS • AIR TOOLS
ROCK DRILLS • TURBO BLOWERS
CONDENSERS • CENTRIFUGAL PUMPS
OIL AND GAS ENGINES

Ingersoll-Rand
11 BROADWAY, NEW YORK 4, N. Y.

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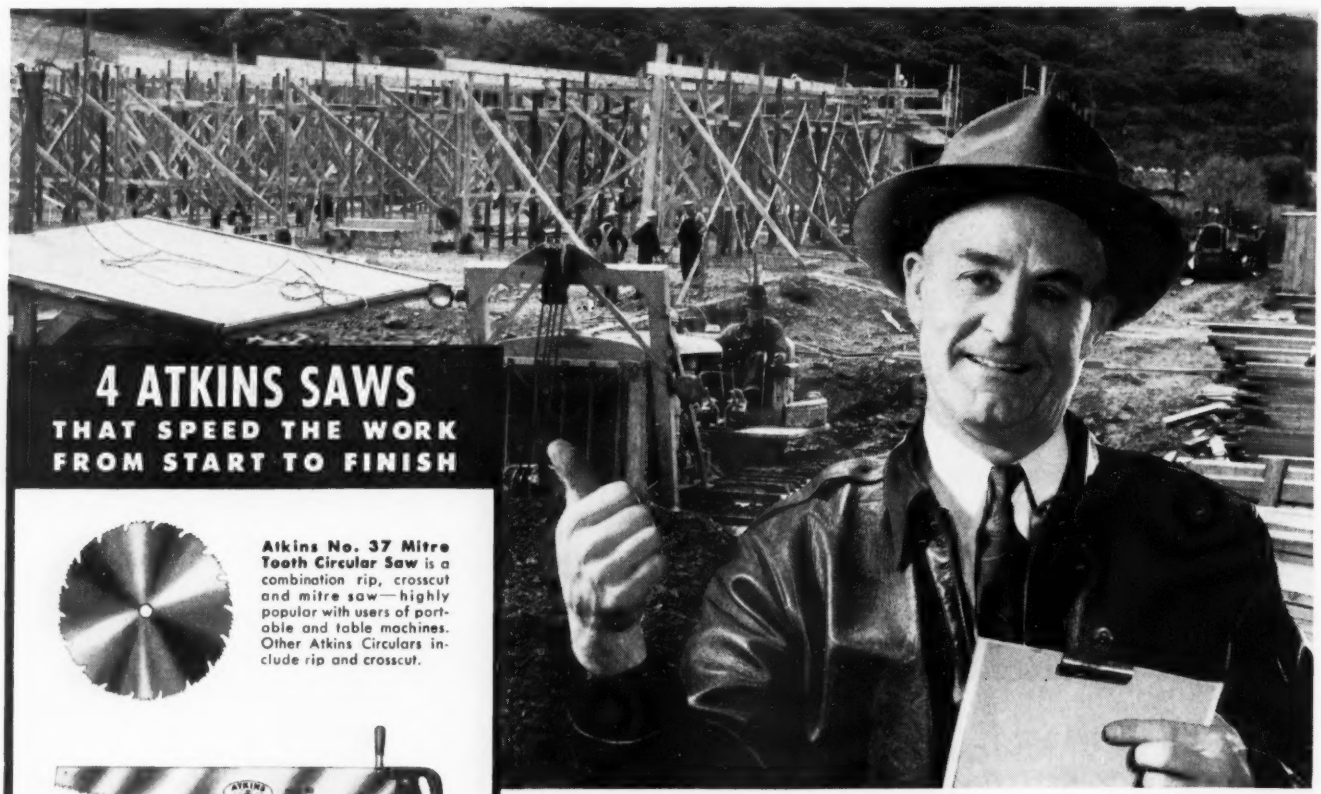
"Believe Me-ATKINS save us money at every stage of the job"



4 ATKINS SAWS
THAT SPEED THE WORK FROM START TO FINISH

Atkins No. 37 Mitre Tooth Circular Saw is a combination rip, crosscut and mitre saw—highly popular with users of portable and table machines. Other Atkins Circulars include rip and crosscut.

No. 390 One-Man Crosscut. Taper ground, clears easily, runs fast. Tuttle tooth, straight back blade is hardened and tempered. Needs very little set. Hardwood handle with large grip. Filed and set, ready for use.

Atkins No. 3000 Handsaw. The latest addition to the Atkins line of handsaws for every use. Has new "Perfect-Grip" Plastic Handle that brings grip closer to the blade and gravity center. Light but stiff "Silver Steel" blade, true taper ground. Straight back, ship point.

Atkins No. 10 Easy Grip Hack Saw Frame. Black rubber handle gives complete control of the stroke, protects hands. Cold-rolled rust-resisting steel frame adjustable 8 to 12 inches. Atkins "Blue End" Hacksaw Blades are tough, fast-cutting, long-lasting.

Yes, it's true; Atkins Saws keep construction sawing costs where they belong — down at sub-basement level.

For every sawing job there's a particular Atkins Saw that cuts faster, easier, cleaner — that represents all the skill, knowledge and improvement gained in 92 years of saw-making experience. Because of the characteristics of Atkins "Silver Steel", these saws stay sharp longer and last longer. When the pressure is on and the backlog high, you can count upon those extra-keen teeth to keep cutting smoothly for record periods. All this adds up to these important factors on your ledger sheets: lower labor costs, less time out for sharpening, greater cutting output.

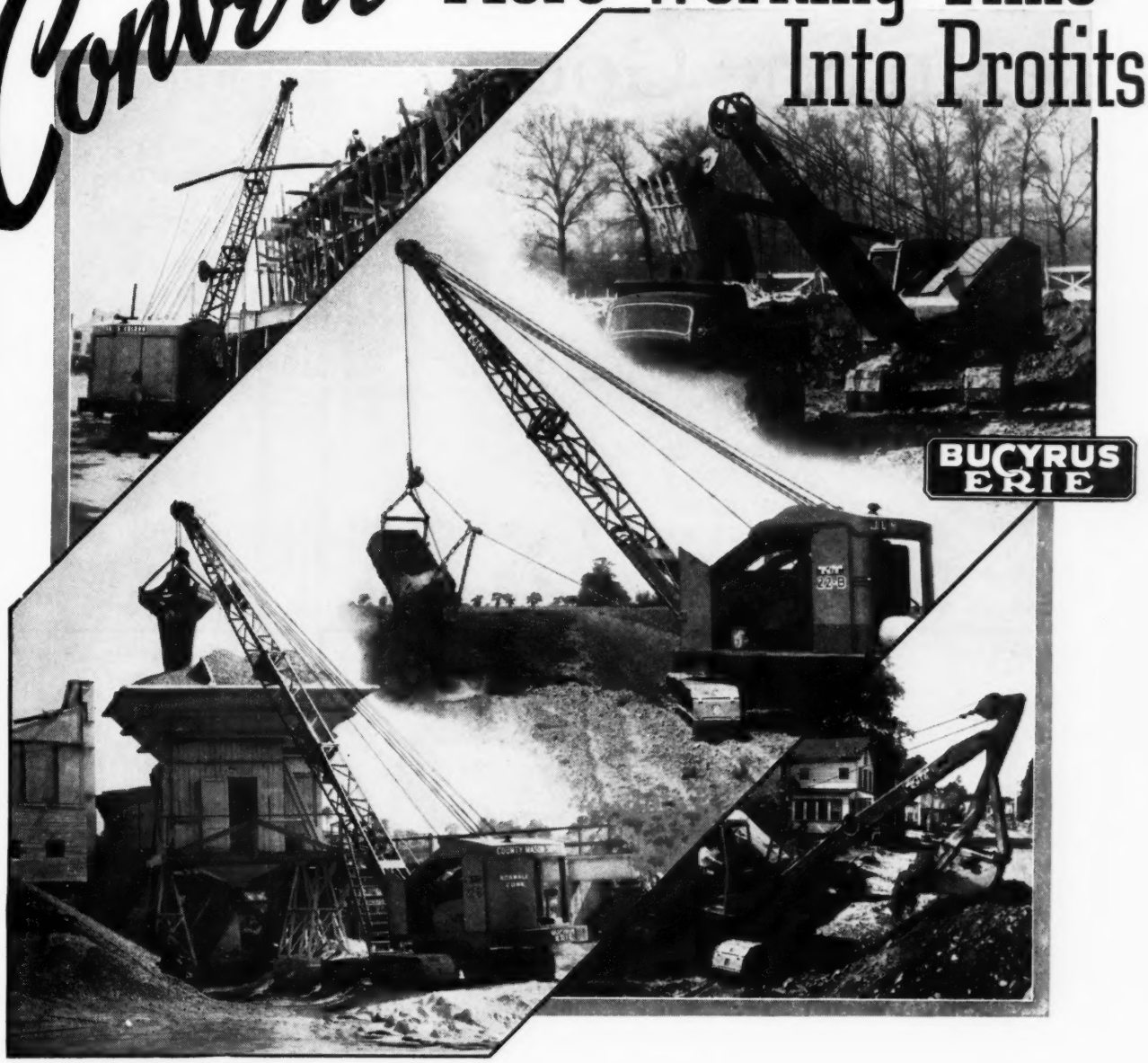
Invest on the profit side of the ledger. *Check with your industrial distributor now on the Atkins Saws you need.*

ATKINS
"ATKINS ALWAYS AHEAD"

E. C. ATKINS AND COMPANY • ***Home Office and Factory:*** **402 S. Illinois Street, Indianapolis 9, Indiana**
Branch Factory: **Portland, Oregon** ***Branch Offices:*** **Atlanta • Chicago • New Orleans • New York • San Francisco**

MAKERS OF BETTER SAWS FOR EVERY CUTTING JOB

Convert More Working Time Into Profits



Each machine in the Bucyrus-Erie 3/8- to 2½-cu. yd. line is readily convertible to various front ends, and a stalwart performer with any type, packing speed and efficiency into whatever work it handles. Large, cool-running clutches and brakes provide accurate control for precision crane work, deliver power where it counts for shovel operation. Clamshell and dragline jobs take full advantage of Bucyrus-Erie stability and power, producing big output through long hours of operation.

With conversion so easy, and performance so efficient with any front end, there's no need to be satisfied with makeshifts — to make one tool do double duty. Let your Bucyrus-Erie distributor give you more information about these hard-digging, easy-handling machines, and discover for yourself how their convertibility can open up more job opportunities for you.

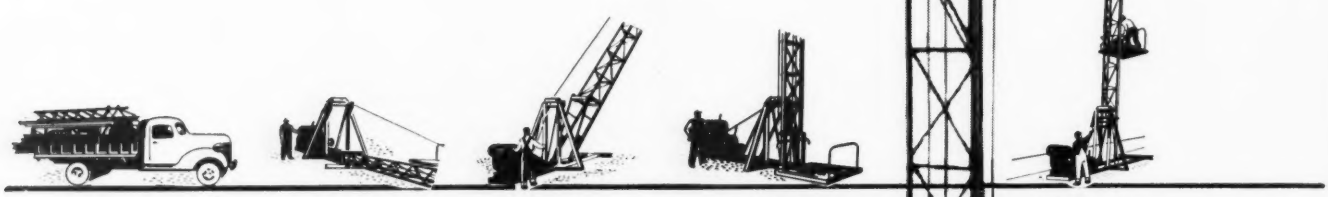
BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE . . . WISCONSIN

98E47

Up She Goes!

American Portable
Material Elevator carries 2,500 pounds to 40 feet or higher at 87 feet per minute!

Moves anywhere by truck . . . sets up quickly by its own power . . . stands on its own feet!

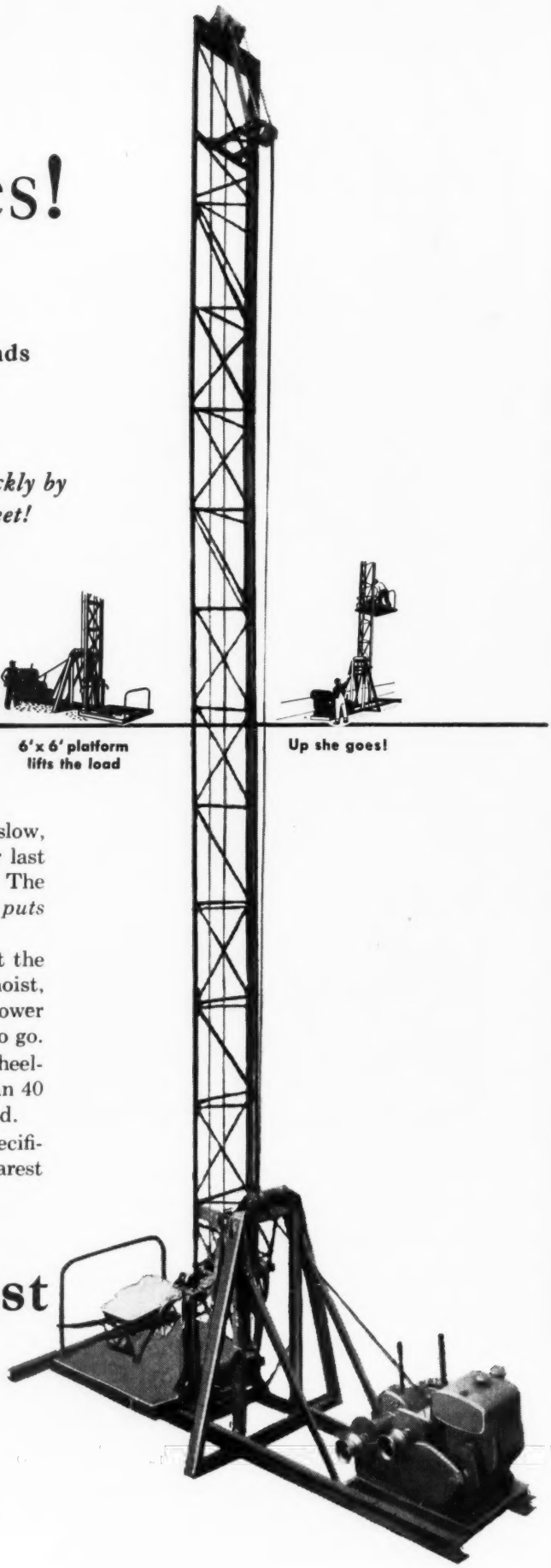


Forget the hammers and saws. Forget the slow, costly, tiresome job of tearing down your last timber scaffold and building a new one. The American Portable Material Elevator *puts itself up!*

Load it all on one truck, in sections. At the job site, just bolt it together. Start the hoist, and watch it swing that sturdy triangular tower up to vertical. Once it's up, you're ready to go.

The skip platform is 6′ x 6′; holds two wheelbarrows; lifts 2500 lbs. For jobs higher than 40 feet, two 10′ tower extensions can be added.

Want descriptive literature—prices—specifications? Write today . . . or see your nearest distributor.



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and DERRICK COMPANY

St. Paul 1, Minnesota

Plant No. 2: So. Kearny, N. J.

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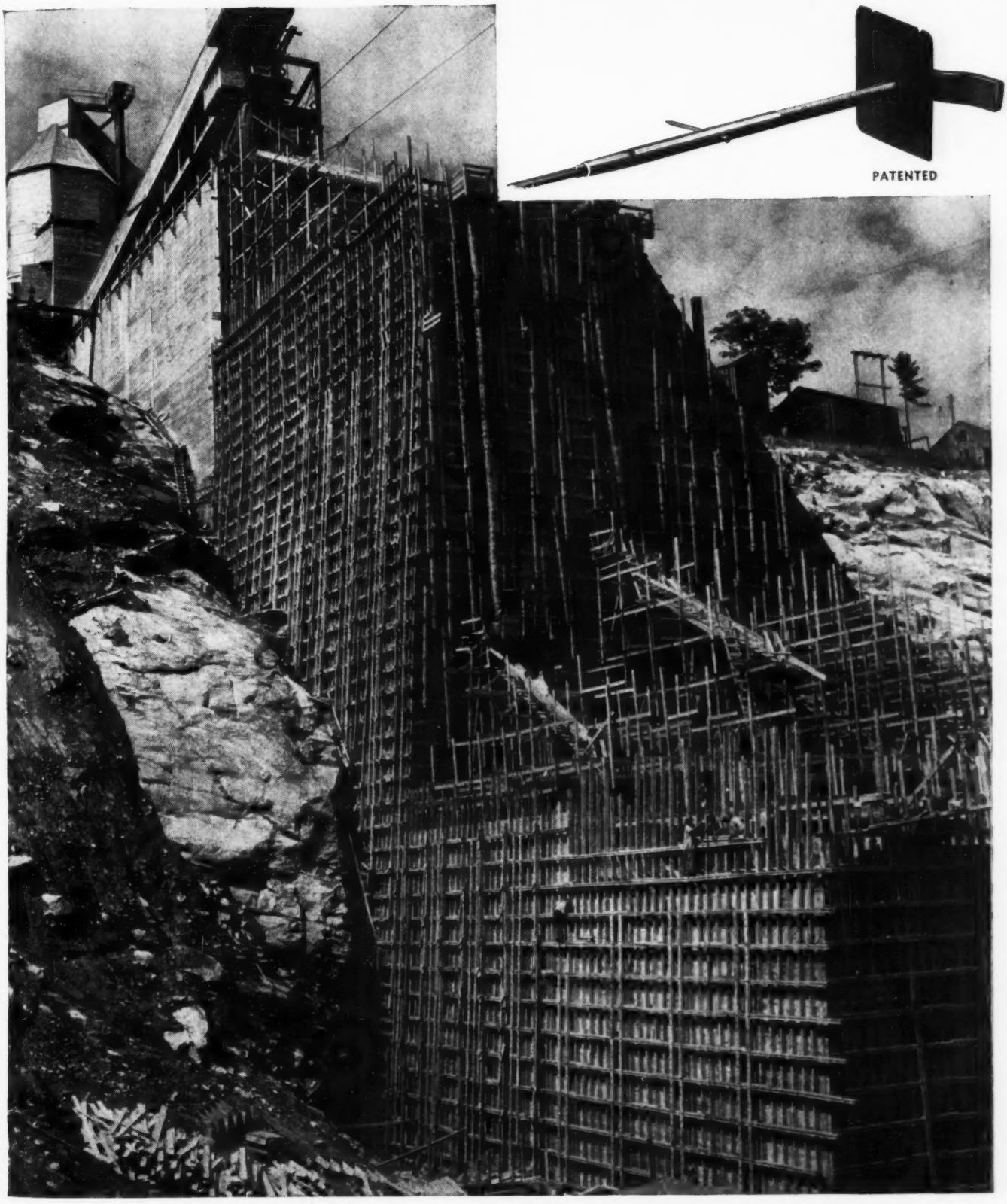
HOISTS • DERRICKS • BLOCKS AND SHEAVES • HANDIWINCH • LOCOMOTIVE CRANES • GENUINE CROSBY CLIPS



PATENTED

High Forms Secured with WILLIAMS CLAMPS

This Spectacular Form Work Made Possible By Added Safety of Williams "Super-Hi" Tensile Tie Rods and Vibra-Lock Form Clamps

Any kind of big concrete work puts strain on forms. But think of the strain on these forms in 50-FOOT LIFTS, on this great dam, 220 ft. high and 850 ft. long, on the Stewartville hydro development on Madawaska River, Ontario.

The engineers took no chances. Forms were made SAFE and SECURE with Williams "Super-Hi" Tensile Tie Rods and Vibra-Lock Form Clamps. Simple—Economical—and STRONG. They save money, speed work, insure SAFETY on ALL KINDS of form-work.

WILLIAMS FORM ENGINEERING CORPORATION

Box 925 Madison Square Station GRAND RAPIDS 7, MICH.

Puts Grip in Graders!

A right tire for each job

ALL-WEATHER EARTH MOVER
for drawn vehicles and general traction

HARD ROCK LUG
for super stamina in all rock work

SURE-GRIP — in grader or earth-mover sizes — for maximum traction on drive wheels.

On the drive wheels of work units — from road graders to giant earth movers — this is the tire that packs pulling power without equal. It's Goodyear's Sure-Grip — "right" on traction jobs because it's designed to bite in and bull through. That *open center* self-cleaning tread does it — makes each lug bar a *separate* traction cleat that takes firm grip with minimum slip, pulls sure and steady in toughest going.

That's why the Sure-Grip is *first choice* where pulling power comes first — just as every other job-proved Goodyear work tire is first choice for its special type of service. And consistent low-cost, long-life performance *keeps* them first choice — with the result that year after year, *more yards are moved on Goodyear off-the-road tires than on any other kind!*

BUY and SPECIFY GOODYEAR—*it pays!*

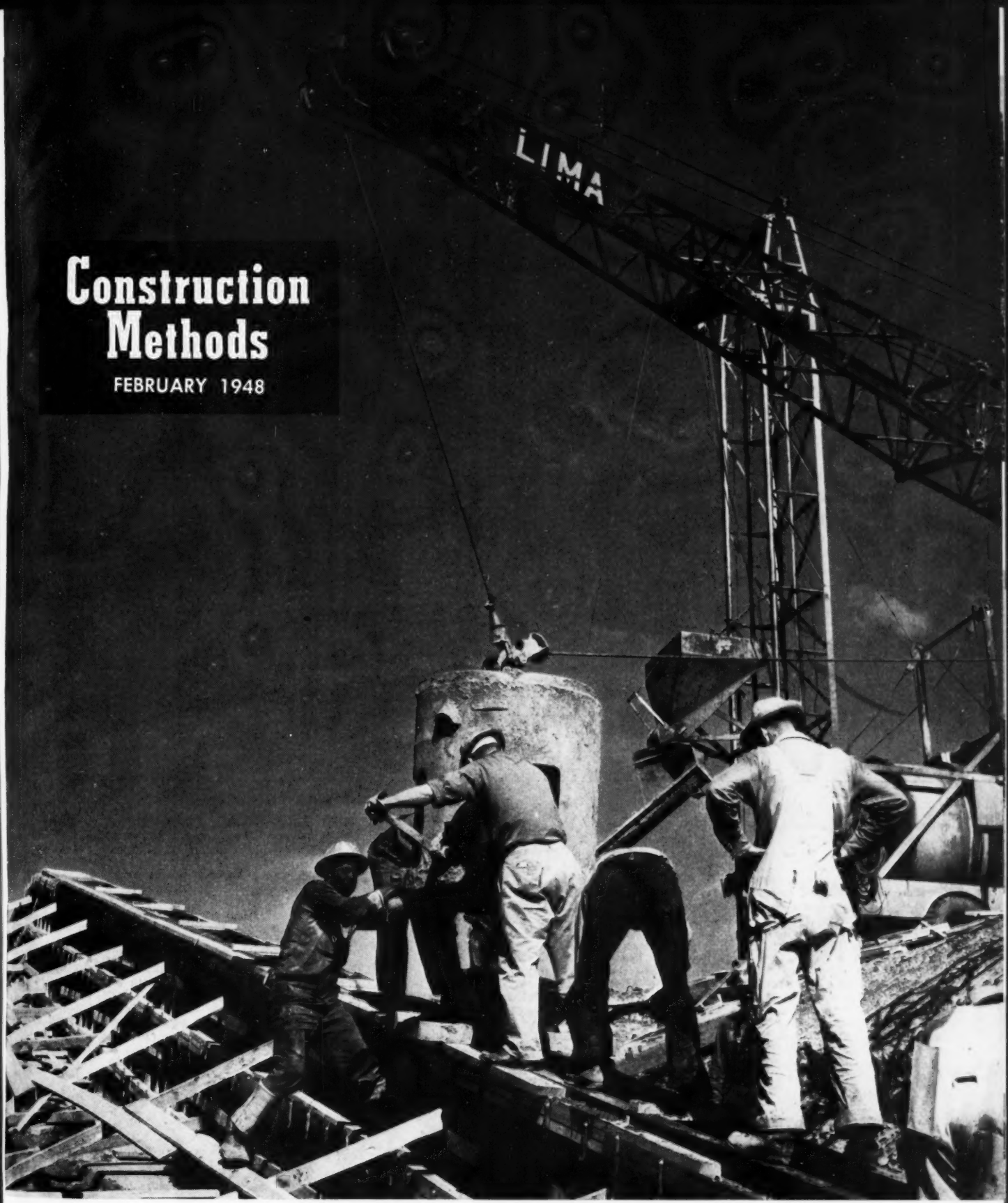
Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company

GOODYEAR

1898 50 GOODYEAR ANNIVERSARY 1948

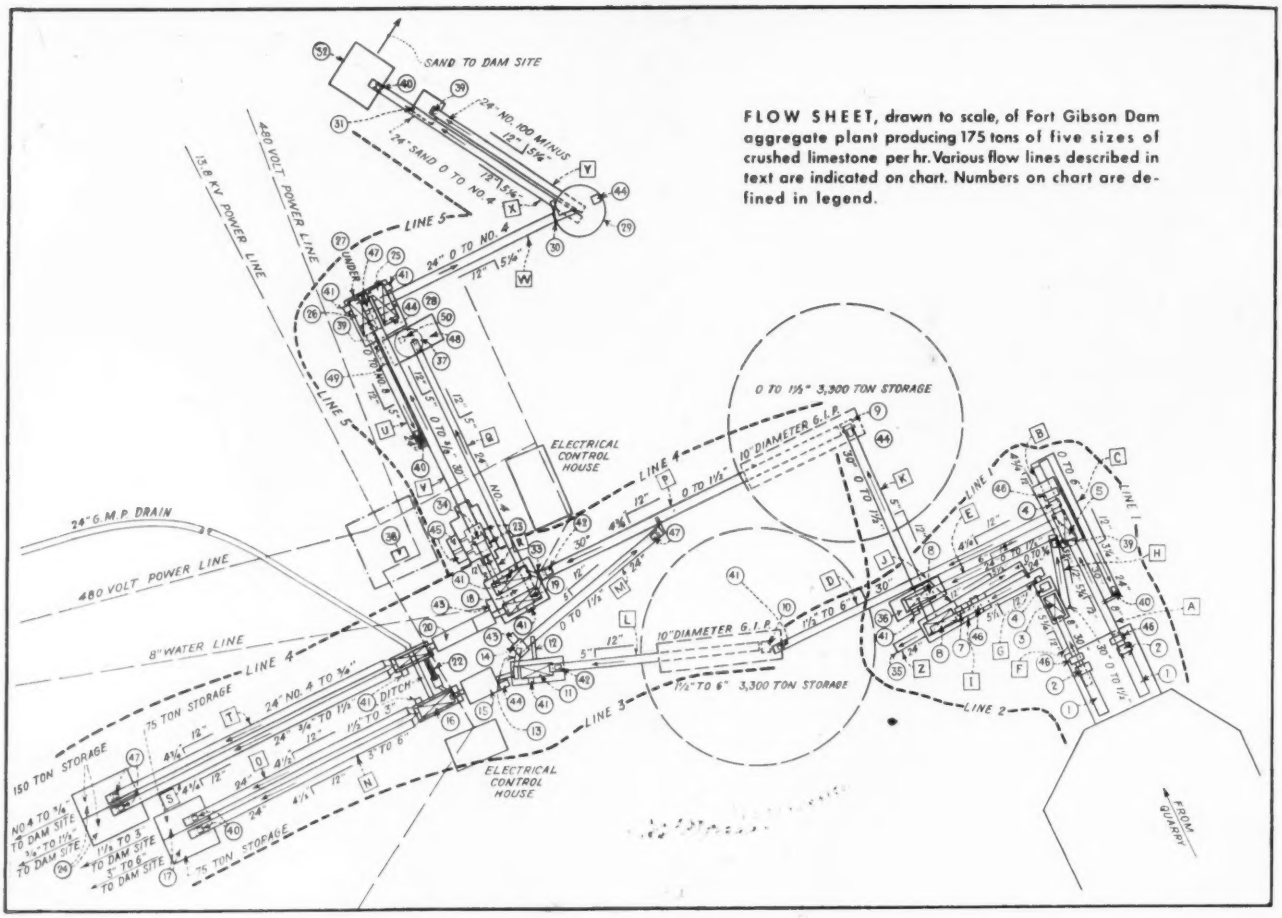
MORE YARDS ARE MOVED ON GOODYEAR OFF-THE-ROAD TIRES THAN ON ANY OTHER KIND

Construction Methods
FEBRUARY 1948



To Control Columbia's Waters

CONCRETE CREW of U. S. Bureau of Reclamation construction forces pours cutoff wall in South Coulee Dam, which will form Coulee Reservoir, main control unit in Columbia Basin irrigation project in Washington. Concrete is delivered to site by Mixermobile, which carries its own hoist tower. Concrete buckets are swung over forms by Lima crane, with fairlead line spotting bucket in desired position. Dam will be earth fill, similar to dam being built at north end of Grand Coulee.



FLOW SHEET, drawn to scale, of Fort Gibson Dam aggregate plant producing 175 tons of five sizes of crushed limestone per hr. Various flow lines described in text are indicated on chart. Numbers on chart are defined in legend.

LEGEND FOR FLOW SHEET

(All Equipment Is Cedar Rapids Except Power Units and Items Noted Otherwise)

(1) Two 36-in. apron feeders; (2) Two diesel-powered 25x40-in. primary jaw crushers; (3) 3½x5-ft. double-deck screen, 3-½ in.; (4) Two diesel-powered 10x36-in. secondary jaw crushers; (5) 4x10-ft. double-deck screen, 6-1½ in.; (6) 4x10-ft. double-deck screen, 1½-2 in., 60-ton bin; (7) 40x24-in. diesel-powered roll crusher; (8) 4x12-ft. double deck screen, 1-1¼ in., 60-ton bin; (9) 30-in. apron feeder in reclaiming tunnel, 3-hp. motor; (10) 30-in. oscillating feeder in reclaiming tunnel, 5-hp. motor; (11) 3½x12-ft. double-deck screen, 1½-3 in., 60-ton bin; (12) Minus 1½-in. bypass chute; (13) Bypass for large stone into minus 1½-in. cycle; (14) 12x36-in. twin jaw crusher; (15) 7x12-ft. Telsmith rotary scrubber; (16) 4x12-ft. double-deck screen, 3-1½ in., with spray bars; (17) Two 75-ton Pittsburgh-Des Moines truck storage bins, coarse stone; (18) 50-ton surge bin; (19) 4x12-ft. double-deck screen, minus 1¼ in. scalping, 60-ton bin; (20) 5x24-ft. rotary scrubber; (21) 4x12-ft. double-deck screen, ¾-No. 4, with spray bars; (22) 16-ft. bucket elevator for minus 1½-in.; (23) Two 40-in. hammer-mill crushers ¼- and ⅜-in. grate bars; (24) Two Butler 150-ton truck storage bins, intermediate stone; (25) 4x12-ft. double-deck screen, No. 4, 150-ton bin; (26) 4x12-ft. double-deck screen, No. 8, 150-ton bin; (27) 30-in. hammer-mill crusher, 150-hp. motor; (28) 150-ton Pittsburgh-Des Moines sand storage bin; (29) 16-ft. Sturdevant dust separator, 75-hp. motor; (30) Bypass gates around separator; (31) 30-ton dust storage bin; (32) 150-ton Pittsburgh-Des Moines truck storage bin, sand; (33) Swing gate control and bypass to direct sand line; (34) Swing gate control to hammer-mills; (35) Waste outlet, 0 to 1½-in stone; (36) Waste outlet, 0 to ¼-in. stone; (37) 16-ft. Sturdevant dust separator; (38) 1,000 kva. transformer; (39) 3 5-hp. motors; (40) 5 7½-hp. motors; (41) 10 15-hp. motors; (42) 2 25-hp. motors; (43) 2 50-hp. motors; (44) 3 75-hp. motors; (45) One 200-hp. motor; (46) 6 diesel engines; (47) 4 10-hp. motors; (48) Two 30-ton storage bins, dust and sand; (49) 30-in. apron feeder, sand; (50) One 30-hp. motor.

BELT CONVEYORS (lengths c.c. pulleys)

(A) 30 in. x 38 ft.; (B) 30 in. x 25 ft.; (C) 24 in. x 57 ft.; (D) 30 in. x 118 ft.; (E) 24 in. x 68 ft.; (F) 30 in. x 27 ft.; (G) 30 in. x 10 ft.; (H) 30 in. x 26 ft.; (I) 30 in. x 47 ft.; (J) 24 in. x 28 ft.; (K) 30 in. x 85 ft.; (L) 30 in. x 82 ft.; (M) 24 in. x 76 ft.; (N) 24 in. x 92 ft.; (O) 24 in. x 92 ft.; (P) 30 in. x 128 ft.; (Q) 24 in. x 106 ft.; (R) 30 in. x 27 ft.; (S) 24 in. x 118 ft.; (T) 24 in. x 118 ft.; (U) 24 in. x 56 ft.; (V) 30 in. x 106 ft.; (W) 24 in. x 80 ft.; (X) 24 in. x 100 ft.; (Y) 24 in. x 70 ft.; (Z) 24 in. x 12 ft.
TOTAL CONVEYORS, 1,791 ft.

Ft. Gibson Aggregate Plant . . .

A Continuous Flow of Crushed Rock

CONTRACTORS for aggregate production at Ft. Gibson Dam are taking no chances on breakdowns holding up concreting operations. They designed and installed a beautiful plant, capable of producing 1,400 tons of five sizes of limestone aggregate, including sand, per 8-hr. shift with a 20-percent waste factor. The plant was designed by Geo. C. Hawkins, consulting engineer of Cedar Rapids, Iowa, for M. O. Weaver, Inc., Des Moines, Iowa, subcontractor for aggregate for Johnson-Winston-Kiewit, general contractors on the big dam. Hawkins used Iowa Mfg. Co.'s Cedar Rapids equipment

throughout except for one Telsmith scrubber, a few Butler and Pittsburgh-Des Moines bins, and two Sturdevant dust separators.

Principal feature of the plant is its dependability of production, gained through liberal use of storage bins throughout, totaling 1,430 tons capacity, two 3,300-ton stockpiles of partly-processed materials midway in the flow cycle, and a couple of bypasses and alternate routes that can be used in emergencies or to vary the ratio of sizes. Thus, no matter where a breakdown occurs, there is enough reserve storage to keep end-product production at a steady rate for some time.

Limestone Aggregate

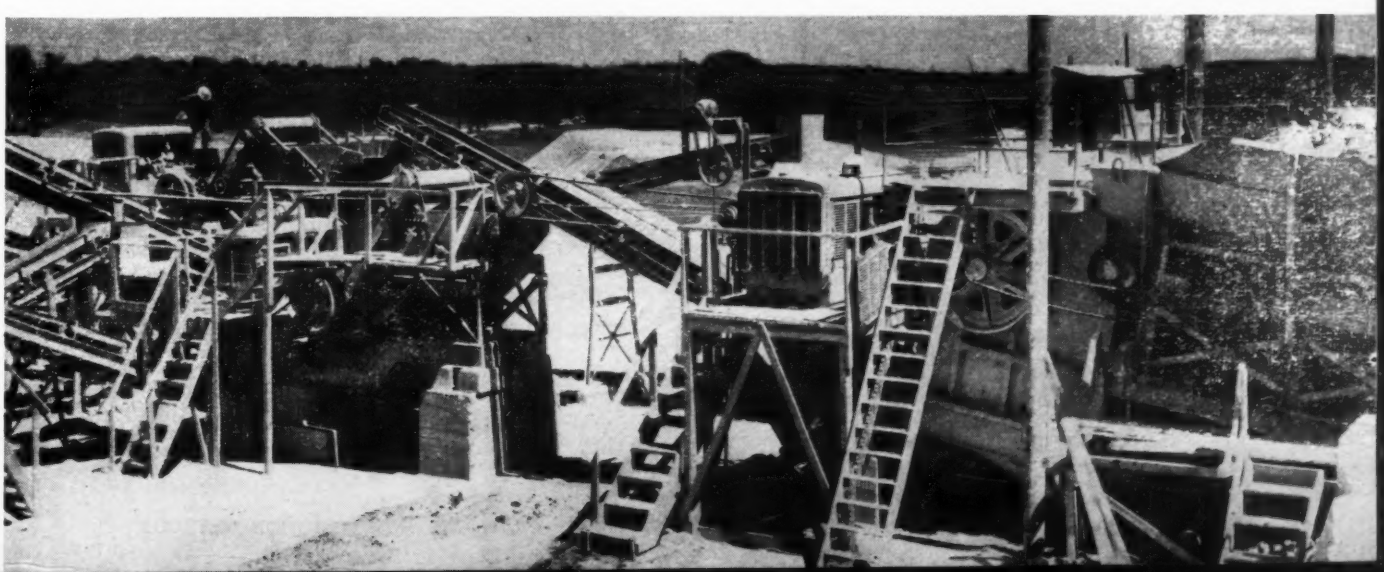
Fort Gibson Dam is a 461,000-cu. yd. concrete structure, 2,850 ft. long and 110 ft. high, being built on the Grand River in eastern Oklahoma for the Tulsa District, U. S. Engineers as a combined flood control and power project. River sand and gravel proved unsuitable for concrete aggregate, so the engineers designated a limestone bed 4½ mi. east of the dam as the source, and specified crushed rock sand for the job. An asphalt-paved road was built between the mixer plant and quarry that permits high-speed truck haul of aggregates. The road winds down the river bluffs in approaching the mixing plant, a topographical feature taken advantage of in arranging gravity dump from trucks to storage piles over a reclaiming tunnel that serves the mixers.

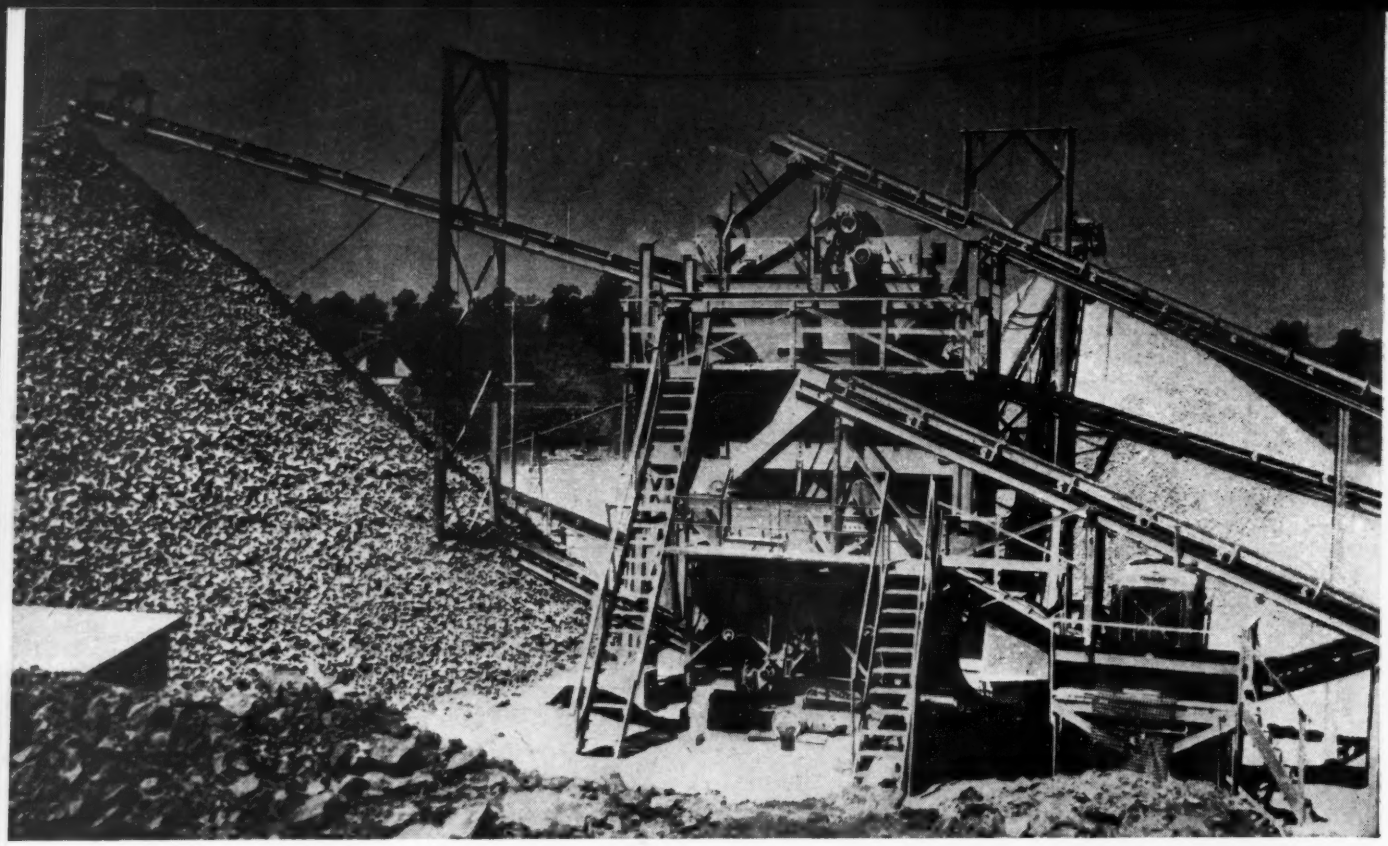
Stripped soil from 25 ft. of overburden at the quarry filled in a nearby ravine to make a large, level site for the aggregate plant where there is plenty of room to

1 AGGREGATE PRODUCTION at Fort Gibson Dam starts with well-developed quarry, where P&H shovel loads blasted rock into Koehring Dumptors for haul to processing plant.

2 PROCESSING of quarry-run rock into five sizes of concrete aggregate, including manufactured sand, starts with Koehring Dumptors discharging into pair of apron feeders serving two primary jaw crushers.

3 DIESEL-POWER CRUSHERS (below), reduce quarry-run rock to 8-in. maximum size at start of processing cycle. Equipment nearest camera is in Line 2 (see flow sheet); beginning of production of 0 to 1½-in. sizes. Line 1, producing 1½ to 6-in. sizes, is immediately beyond.





4 GROUP OF SCREENS and roll crusher at end of Lines 1 and 2 give final separation to two main groups of sizes—1½ to 6 in. and 0 to 1½ in.—for intra-cycle storage in two 3,300-ton stockpiles.

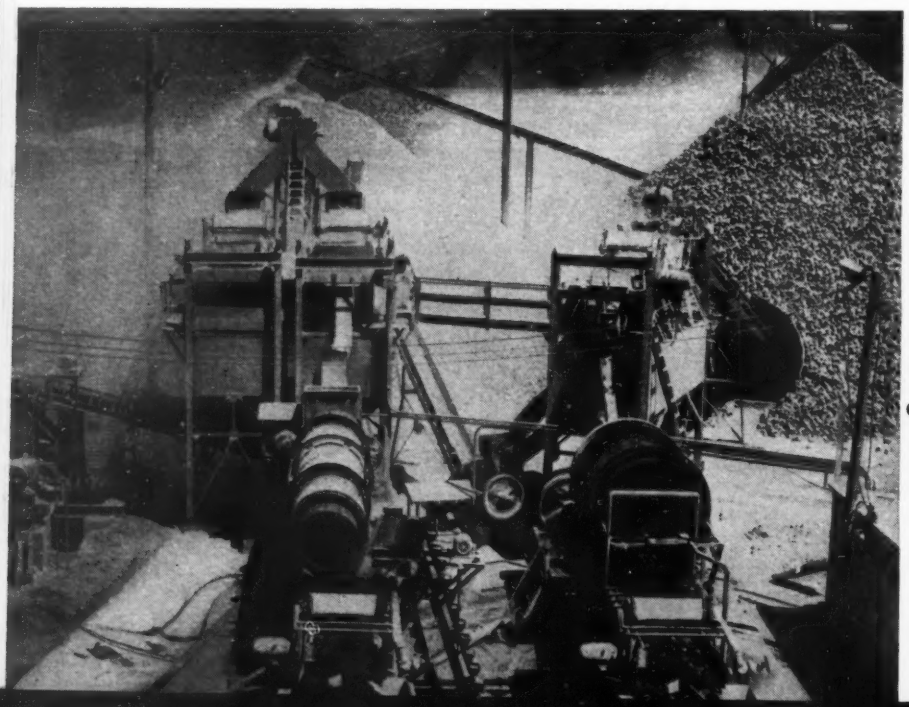
spread out. Blasted quarry rock is loaded by a P&H 855 shovel into Koehring Dumptors for a short haul to the plant. Water for the washing units is supplied through an 8-in. line 1,700 ft. long, from a small lake that also serves as a sludge settling pit. Water is pumped into the lake from a pumping station on Ranger Creek, 14,000 ft. away.

The plant produces five sizes of aggregates: (1) Crushed sand up to No. 4 size; (2) No. 4 to ¾-in. rock; (3) ¾ to 1½-in. rock; (4) 1½ to 3-in. rock; and (5) 3 to 6-in. rock. Most of the dust under 100-mesh size is removed by the Sturdevant separators.

It is an elaborate, complicated layout. To produce 175 tons per hr. of these various size aggregates the following equipment is required: One roll and 5 jaw crushers; 3 hammer-mills; 2 dust separators; 2 rotary scrubbers; 10 double-deck screens (two with spray bars) from 3½x5 ft. to 4x12 ft. in size; 1,991 ft. of belt conveyors in 26 flights, 24 and 30 in. wide, from 3 to 128 ft. long; one reciprocating and 4 apron feeders; one 16-ft. bucket elevator; 16 bins from 30 to 150 tons capacity each, 1,430 tons in all; 2 intermediate stockpiles with 2 reclaiming tunnels; 31 electric motors from 5 to 200 hp., totaling 850 hp.; 6 diesel engines totaling 600 hp.; a transformer bank; 2 electric control stations and 2 pumping plants.

The flow cycle starts in two parallel main lines, each beginning with an apron feeder receiving discharge of quarry-run material from the Dumptors, and feeding a 25x40-in. primary jaw crusher. Line No. 1 (designer's designation) processes material from 1½ to 6 in., ending in a 3,300-ton storage pile of this size. A reclaiming tun-

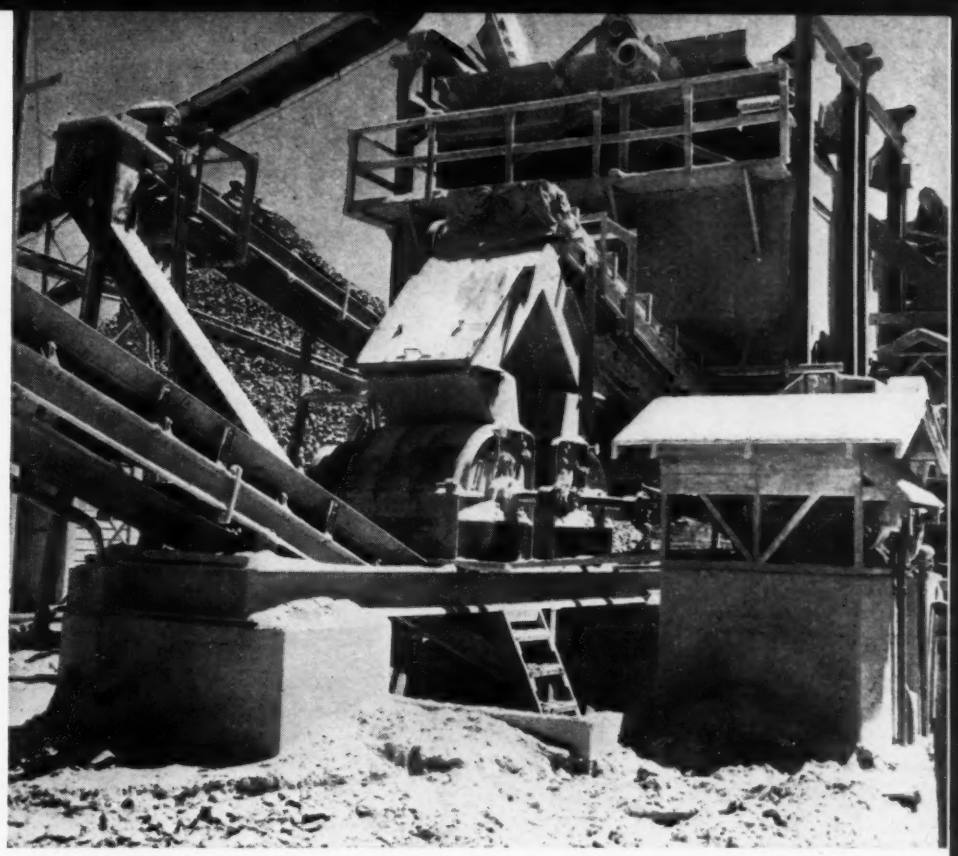
5 FROM RECLAIMING TUNNELS (below), under stockpiles, four finished sizes of aggregate come out of two rotary scrubbers and final separation screens. In center is Line 4, producing No. 4 to ¾-in. and ¾ to 1½-in. sizes. Two large sizes, 1⅛ to 3-in. and 3 to 6 in., are produced in Line 3 at right. Bucket elevator between scrubbers is alternate route for large stone if needed for smaller sizes. Cedar Rapids hammer-mills at left are start of sand-producing Line 5.



nel under the pile leads to Line No. 3, which turns out two sizes, 3 to 6 in. and 1½ to 3 in. Primary Line No. 2 handles everything under 1½ in. at the start, ending in another 3,300-ton storage pile of the smaller material.

Line 4 leaves from a reclaiming tunnel under this pile, producing ¾ to 1½-in. and No. 4 to ¾-in. sizes. Minus 1½-in. stone from Line 3 is also shifted to Line 4. All material destined for sand is taken off Line 4 into Line 5 containing the hammer-mills and dust separators.

Because all transportation from plant to dam is by truck, ample storage bins have been set up to hold the end products. The two larger sizes end in 75-ton bins, the smaller sizes in 150-ton bins. Two 30-ton bins hold the dust separated out of the fines until it can be trucked away. Sand is hauled to the dam in special 16-yd. Daybrook dump trailers.



6 HEART of sand-producing Line 5 is pair of Cedar Rapids hammer-mills under two of largest screens in system, 4x12-ft. double deckers. Lead from stockpile is at upper left. Belt ending in long spout at left has been extended since picture was taken to feed one of two Sturdevant dust separators.

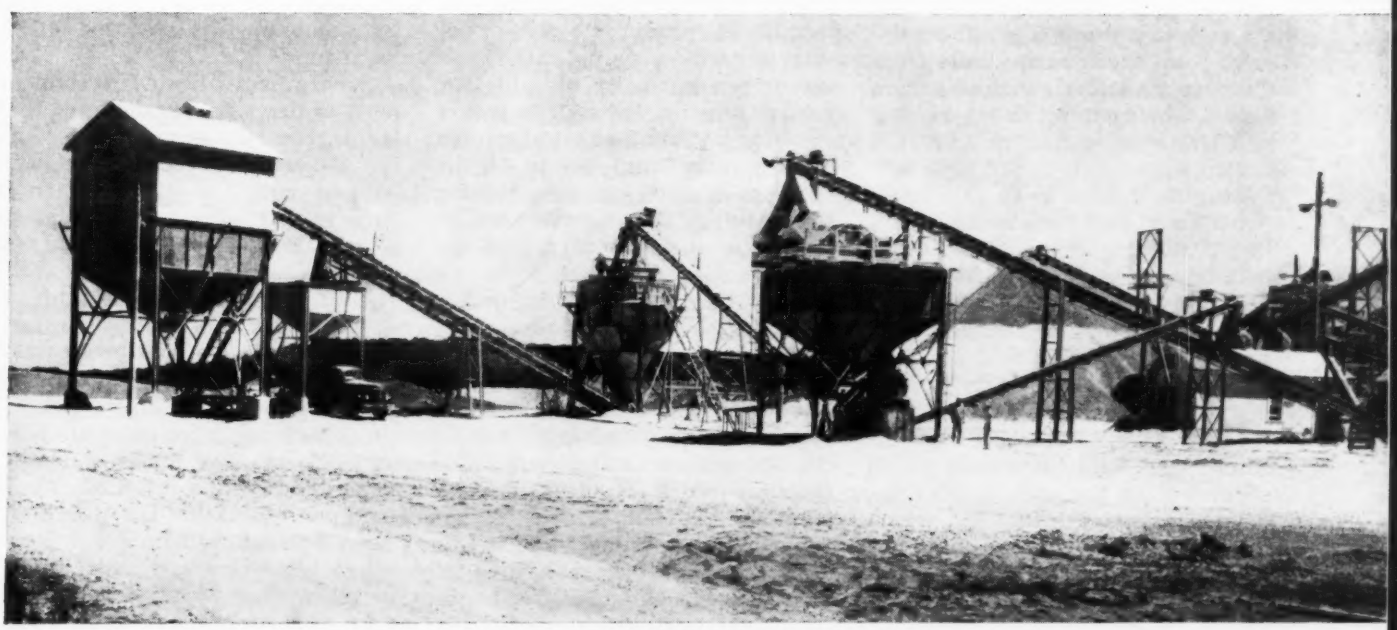
Detail Flow Cycles

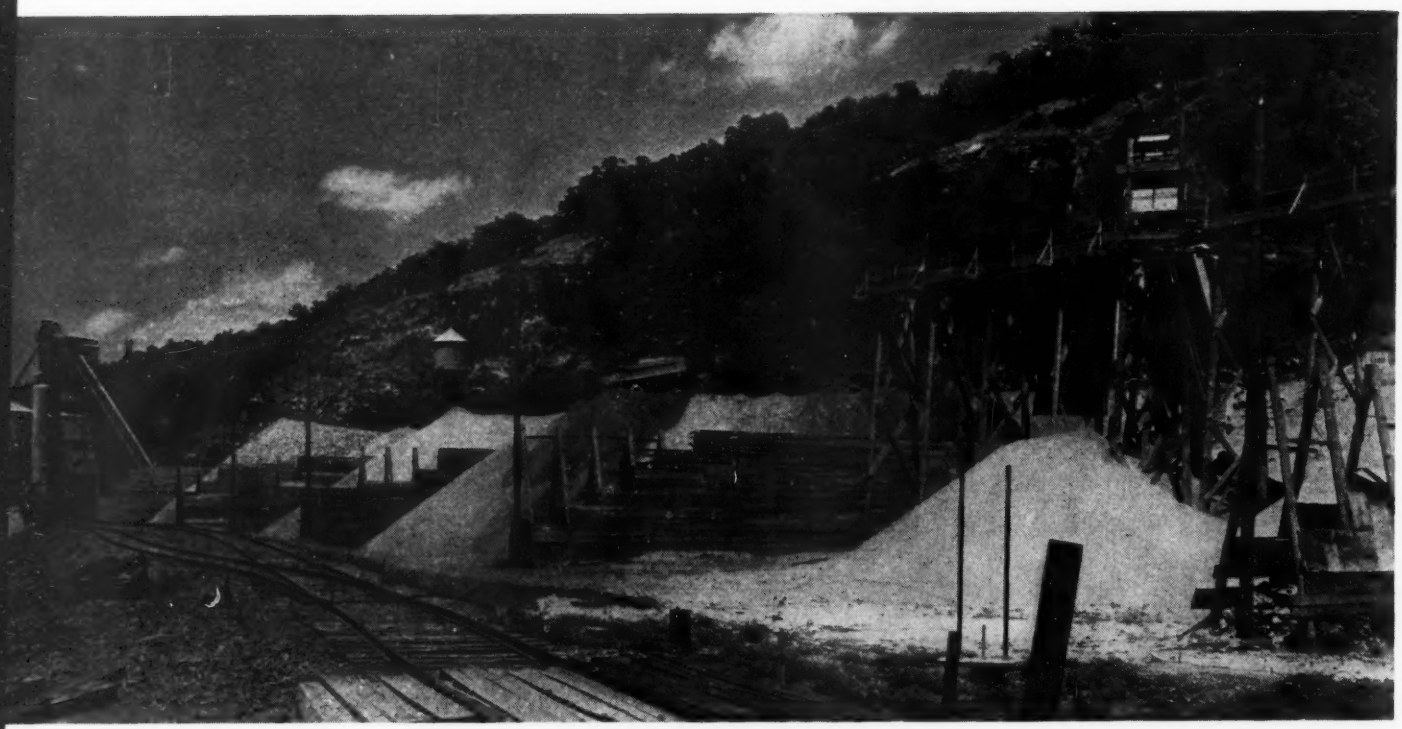
A layout of the plant drawn to scale is shown in the accompanying drawing, from which the flow cycles can be determined. The following brief summary of these flow cycles will supplement the information given in the drawing.

Line 1—Quarry stone from an apron feed is reduced to 8 in. by a primary jaw crusher, then goes by belt to a double-deck screen. Here plus 6-in. stone is reduced to 6 in. by a secondary jaw crusher, returning over two conveyor flights to the belt feeding the screen. Everything from 1½ to 6 in. going through the screen is carried by belt to the big 1½-to 6-in. stockpile. Minus 1½-in. stone from this screen is bypassed by belt directly to Line 2.

Line 2—Everything in this line ends up as sand and the two smaller stone sizes. Quarry rock

7 END OF RUN for sand (Line 5). Third Cedar Rapids hammer-mill, for further production of fines if needed, is under big screen and bin unit in center foreground. Sturdevant conical dust collector removes fines under 100-mesh, which are deposited in small bin over truck. Sand storage bin is at extreme left. Second Sturdevant dust separator has now been installed alongside bin in center.





8 ALL AGGREGATES end up here, in separate stockpiles over reclaiming tunnel leading to mixing plant at left, not far from dam. Road from aggregate plant hugs side of bluff to permit gravity dumping of trucks into several stockpiles.

from an apron feeder passes through a primary jaw crusher as 8 in. maximum size, thence by belt to a double-deck scalping screen. Minus 1½-in. stone from this screen is bypassed to a belt carrying the same size from early operations in Line 1 thence to another screen and into a gated bin where as much material as desired can be drawn off as waste or for road metal. Plus 3-in. stone from the first screen goes through a secondary jaw crusher, then to another screen, where large pieces are returned through a roll crusher to join intermediate sizes from the first screen. All material from Line 2, now reduced to 1½ in. and smaller, ends up in a 3,300-ton stockpile.

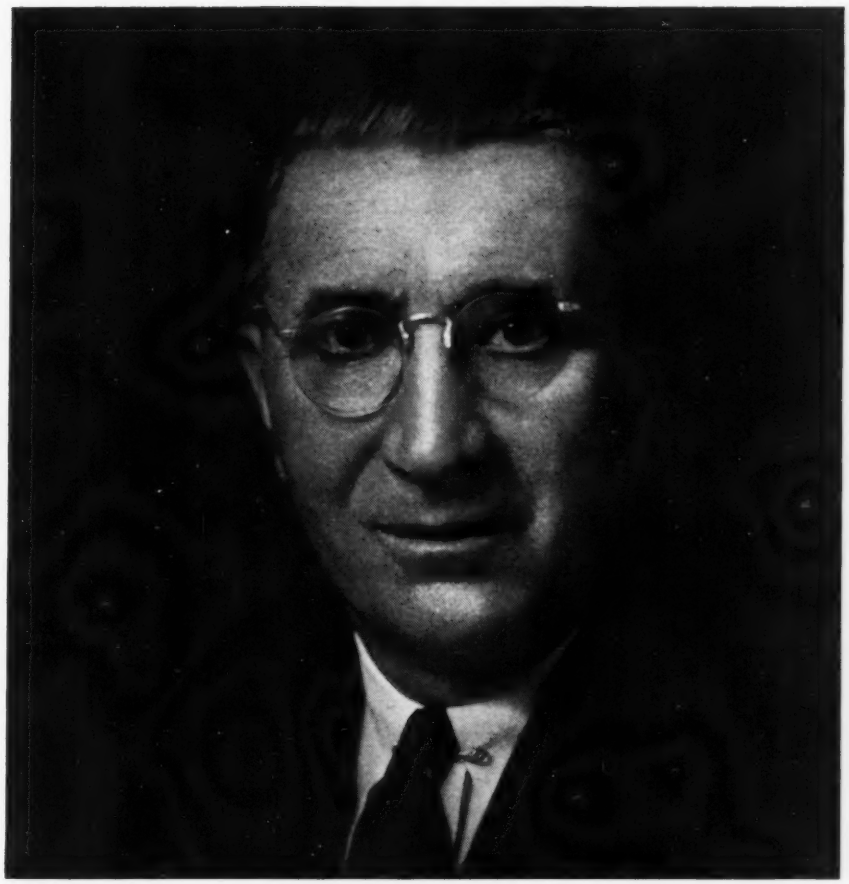
Line 3—Inside a 10-ft. corrugated metal pipe reclaiming tunnel under the big-stone stockpile at the end of Line 1, 1½ to 6 in. stone is fed by an apron feeder on to a belt leading to a big double-deck screen. Here fines below 1½ in. are bypassed to Line 4, while the remainder, in normal operation, goes through a rotary scrubber to another screen with spray bars, which separates out the two larger sizes, 3 to 6 in. and 1½ to 3 in., which go into 75-ton storage bins for truck haul to the dam. All fines resulting from this process are bypassed to Line 4 by a bucket elevator. From the first screen in this line is the first alternate route in the system, for any proportion of this large stone can be shunted through a twin-jaw crusher and into Lines 4 and 5 for production of any size from sand to 1½ in.

Line 4—From another similar reclaiming tunnel under the small-stone storage bin, all 0 to 1½-in. material goes by reciprocating feeder on to a belt leading to the biggest screen unit in the cycle, a pair of 4x12-ft. double-deck screens, directed into either or both units by a swing gate. From one screen normally all plus No. 4 size goes on through a rotary scrubber and another set of screens for separation into ¾- to 1½-in. and No. 4 to ¾-in. size 150-ton truck storage bins, or any proportion from the screen can be bypassed through the twin-jaw crusher for further reduction. Minus ¾-in. material from the same screen can be shunted directly to the sand hammer-mills in Line 5, if desired, along with all material from the other one of the twin screen units. It was found that too much dust was passing through the twin screens, so arrangements were made to bypass any proportion of minus No. 4 into Line 5, through an air separator, where minus 100 fines can be removed, the rest going on as sand.

Line 5—All material destined for sand comes from the twin screen units in Line 4. In general it passes through twin hammer-mills, then is screened again, with any proportion desired shunted through a third hammer-mill for production of more fines if needed. Then, by means of swing gates, the sand can be passed through another air separator to take out the dust, or goes directly to a 150-ton truck storage bin. The limestone dust is disposed of as fertilizer.

Such a complicated system is hard to describe, but in brief that is the process. Army engineers and the general contractors are well pleased with the plant, which is turning out exact proportions of all sizes desired, clean, washed and well graded.

L. H. Peterson is superintendent of the plant for M. O. Weaver, Inc., and designer Geo. C. Hawkins also gives the operations his personal attention. Oscar McCormick is project manager for Johnson-Winston-Kiewit. The job is under the general direction of Col. C. H. Chorpening, U. S. District Engineer, Tulsa, for whom Frank Newell is resident engineer in charge of the work.



JOHN MacLEOD

THE FAR WEST has produced some great construction men. Tops among them is John MacLeod, whose uncanny sense of construction, unusual organization ability, and wonderful personality have carried him from a carpenter's job in Canada to head of his own Macco Corporation of Clearwater, Calif., one of the country's biggest contracting firms.

John MacLeod's career is a Horatio Alger story come true. He was born Feb. 12, 1894, at Invernesshire, Scotland, and after graduation from Queens Park High Grade School at Glasgow, moved to Canada at the age of 17. He started right out in construction as a carpenter for Walter Hipburn Co. at Vancouver, and has been a construction man ever since.

Mac soon got a job as carpenter foreman for Bates & Rogers Construction Corp. (Alma Mater of many prominent construction men) on the Grand Trunk Pacific in Western British Columbia. He stayed up there as construction superintendent for the railroad, later switching to the job of general superintendent, tie and timber department, Canadian Pacific R.R.

In 1923 Mac came to the United States, joining Wm. Simpson Construction Co., Los Angeles, as a superintendent. After six years he struck out for himself, forming the Macco Const. Co., organized primarily to build derricks and other facilities for California oil companies. In a few years Mac was ready for bigger fields, so he branched out into general engineering construction with San Gabriel Dam No. 2 as his first big job.

Ever since its first venture, the story of Macco has been one success after another. Total contracts completed exceed 212 million dollars, of which 150 millions was in war work, from San Diego to Adak in the Aleutians. Mac built air fields by the score, bases, docks, shipyards and other facilities for the armed forces with such dispatch that he received "E" awards eventually studded with stars for repeat performances, Distinguished Civilian Service citations and personal commendations from military authorities.

Mac is a busy man. His Macco Corp. embraces five divisions: construction, oil rig building, the Brisbane Rock Co. of San Francisco, the Antelope Materials Co. (oil well drilling clays), and the Macco Lumber Co. He also founded Macoil Corp., which has developed 75 oil wells in the Newport field. Yet he has had time to devote to the welfare of contracting, largely through his long connection with the Southern California Chapter, Associated General Contractors of America, of which he was president in 1941. He is also a national A.G.C. director.

When unionism hit traditionally open-shop Southern California several years ago Mac came to the front as a labor negotiator. He has been joint chairman of his chapter labor relations committee five of the last six years. His Scotch tenacity, his innate diplomacy, and his human understanding have done much to bring about amiable labor relations between A.F. of L. building trades and the contractors in that area.

The carpenter from Scotland has made good as a contractor. But his success has never dimmed his sense of responsibility to his profession and to his fellow men. Construction always needs leaders like John MacLeod.

Williamsburg Bridge Gets

WILLIAMSBURG BRIDGE main suspension span carries ends of side truss spans, which are independent of bridge cables. Side-span load is transmitted to upper chords of main-span stiffening trusses by overhead transverse latticed girder (arrow), through bearing at each end. Joints between lower chords of main and side spans are pin-connected. Bearings between transverse girder and stiffening trusses were replaced on both Manhattan (near) and Brooklyn sides.

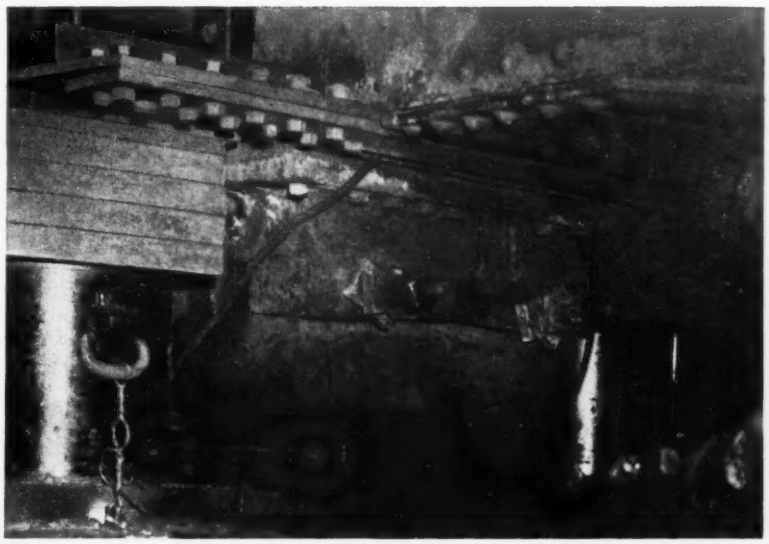
WHEN FOUR SLIDING BEARINGS that connected the shore truss spans to the main suspension span of New York City's Williamsburg bridge ceased to function properly, considerably damaging the structure, the Department of Public Works designed segmental roller bearing replacements and devised a scheme for installing them in quick night moves to minimize interruptions to traffic. Peerless Construction Co., contractor for the job, successively jacked up each of the bearing points and substituted the new assemblies, then carefully shimmed them to redistribute the connecting-span loads correctly to the supports.

BY NATHAN DEUTSCHMAN

Senior Resident Engineer
Department of Public Works
New York City

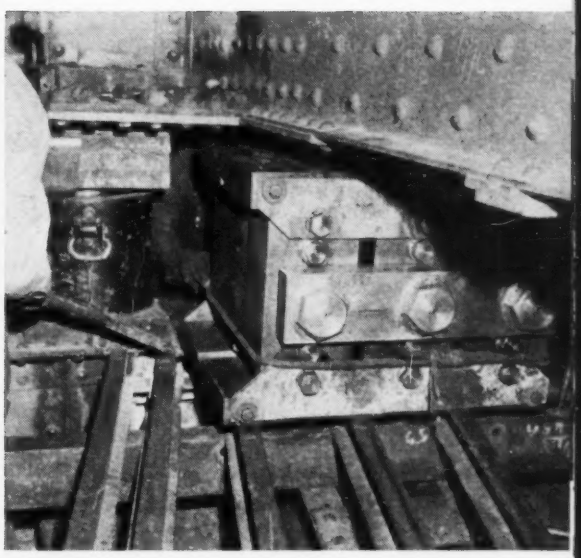
The bearings rested on the top chords of main-span stiffening trusses which cantilevered 25 ft. shoreward from the towers. They picked up reactions of overhead transverse latticed girders that partly supported the connecting spans, the rest of the load going into pinned joints between bottom chords. Freezing of the sliding assemblies caused cracking of nearby bridge members, and the bearings

Two Pair New Shoes



Out comes old . . .

Frozen sliding bearing of Williamsburg bridge, New York City, is removed while jacks hold corner of span.



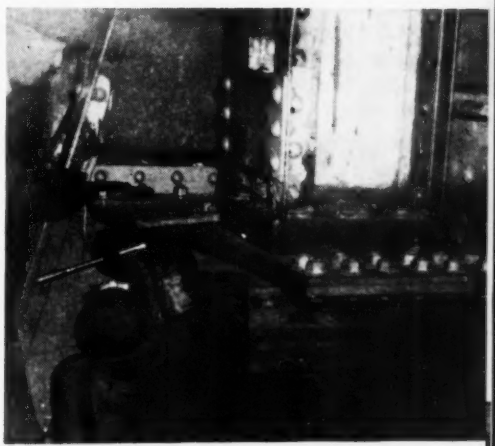
In goes new . . .

Segmental roller bearing is slid to place along rails by pinch bars and cable to hand crab.

picked up more than twice their designed dead load of 240 tons each.

Bearing replacement was complicated by the need for accurately measuring and redistributing the dead loads while inconveniencing as little as possible the traffic on the busy span (which carries heavy subway, trolley, vehicular and pedestrian traffic across the East River between Manhattan and Brooklyn). Accordingly, preparatory work was done by day, and the actual replacement between 11 p.m. and 5 a.m. with the bridge closed to all traffic but two trolleys.

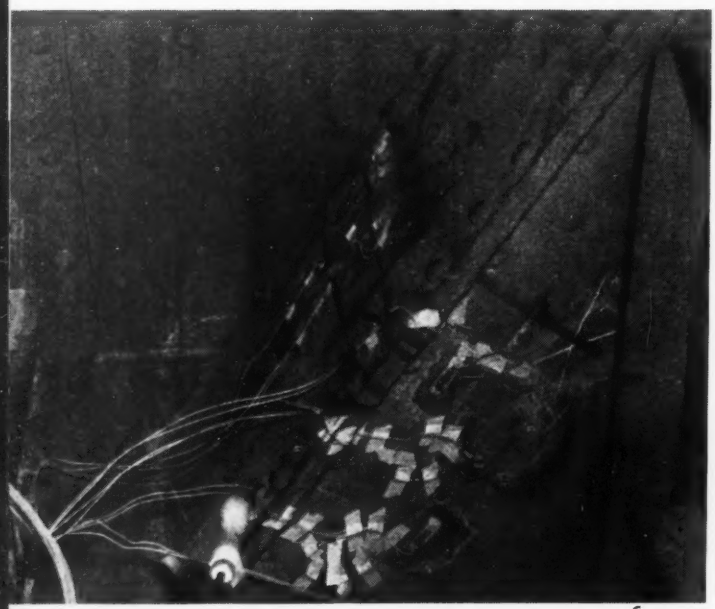
Each of the four bearings was replaced separately. In preparation for a change-over, two heavy jacking brackets were welded to the sides of the transverse girder, in line with the bearing and the main span truss. Beneath the brackets two 300-ton Dudgeon hydraulic jacks were placed on the top chord of the truss, which was reinforced as a jacking pad. Rivets holding the old sliding assembly were replaced with bolts, and the new bearing was assembled ready to move into position. Electrical recording apparatus was set up to read loadings from strain gages



JACKING BRACKET ASSEMBLY is bolted and riveted to connecting span end post after welding to overhead transverse latticed girder (right). Dudgeon 300-ton jack rests on top of main span stiffening truss.

Cracks are chipped . . . Welded . . . And ground . . .

Members damaged by frozen bearing are quickly repaired while pair of jacks holds span after bearing is removed.



Strain gage measurements . . .

Are converted to bearing load . . .

Bearing failure caused incorrect distribution of loads to supports. New bearings were shimmed until gages registered correct loading.

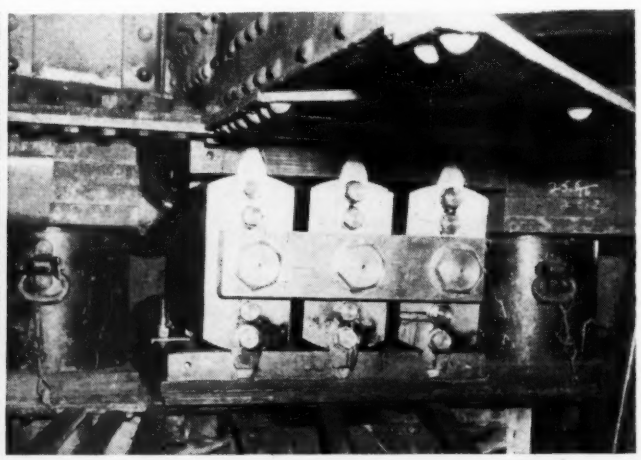
cemented to selected truss diagonals.

For a typical replacement, traffic was halted at 11 p.m. and initial strain gage readings taken. The pair of jacks, lifting from 380 to 520 tons, raised the transverse girder free of the bearing assembly which was then removed. All cracks in the top chord thus exposed were welded. The new bearing, weighing 3 tons, was slid along skid rails and bolted in place on the underside of the overhead girder. Filler and shim plates were packed beneath the bearing, and jacks released. Plate thickness was varied until the bearing load, as measured by strain gage, reached the correct 240 tons. The assembly was then finally welded in place less than 6 hr. after the replacement was started.

The work was done under direction of the Construction Division, Department of Public Works, New York City. J. Frank Johnson is division director, H. C. Gaffney deputy director and William R. Barry division engineer. The writer was senior resident engineer. For the contractor, Peerless Construction Co., New York City, Charles Tyroler was project manager and John Fennell was superintendent. Rose & Rose, New York, were consulting engineers on strain-gage procedure and load measurements.

INSPECTOR CHECKS (below) with feeler gage for full bearing (less than 0.002-in. clearance) along entire length of each roller after jacks are released. Temporary tie plates, top and bottom, hold assembly together in correct offset, no-live-load position.

NEW BEARING (below), complete except for welding of plates and inclosing with sheet metal, rests on bevel, wedge, and shim plates. Contractor was ready with shims from 1/16 to 1/2 in., pair of wedge plates and pre-milled bevel plate to make up difference between non-parallel chords and to adjust bearings to take correct load.



MANPOWER proves best method of transporting long reinforcing cages to forms for supporting beams on Seattle stadium.

Heave Ho...

REINFORCING MARCHES TO FORMS

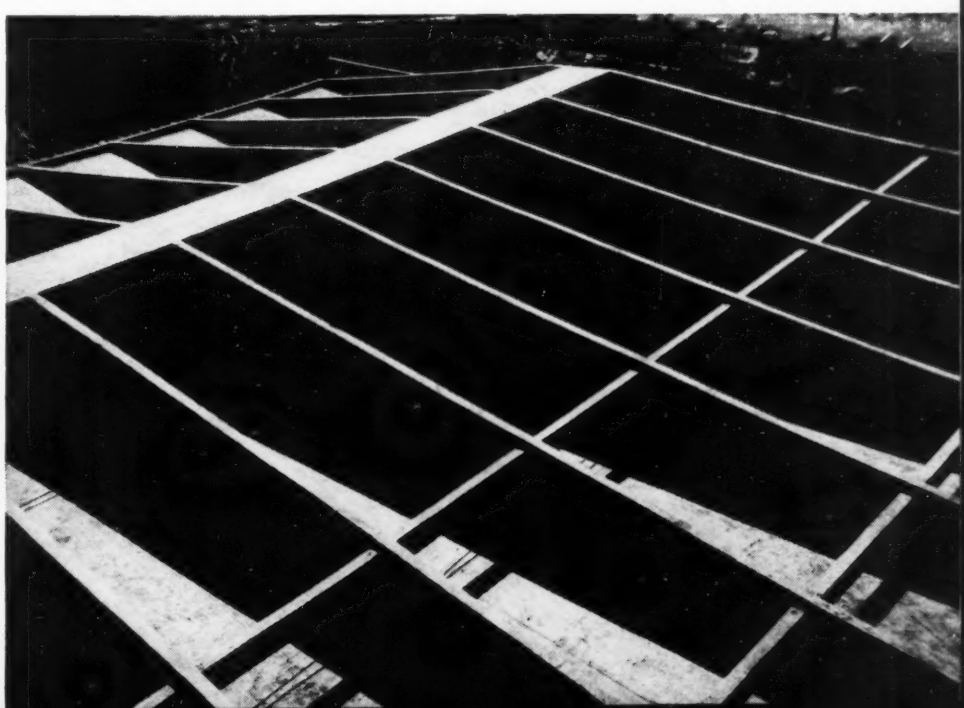
DESPITE the mechanization of construction today, there are times when manpower alone is best for the job at hand. The men in the accompanying photo are not carrying fish nets out to sea; they are toting a cage of reinforcing bars to place in a concrete stadium roof in Seattle, Wash. This roof is flat on the bottom and supported from above by a series of reinforced concrete ribs and a concrete box girder.

The 8½-in. thick ribs are each 108 ft. 8 in. long, but the reinforcing cages are broken by the box girder. Maximum length of individual cages is 68 ft. The ribs taper from 8 ft. high at the box girder to 3 ft. at the rear edge of the roof.

To facilitate erection, these cages were fabricated on the ground. A pair of cranes then hoisted them to the roof some 65 ft. above ground level. At that point manpower took over and machines took a back seat. The load was assumed by a crew of husky men and the reinforcing bar cages moved into position.

The stadium, named "Seattle High School Memorial Stadium" was built for Seattle School District No. 1. George Wellington Stoddard & Associates were architects on the job and general contractor was Puget Sound Bridge & Dredge. Subcontractor for the reinforcing was Matt Schille.

REINFORCING CAGE (below) went into this grid of concrete beams and box girders to support cantilevered stadium roof. Obviously best method of handling reinforcing in tough situation like this was by hand.



WALL ASSEMBLY for Essex Village houses is done in yard near site by carpenters using pre-cut lumber fitted into place with aid of jigs.

Pre-Assembly Speeds Flo

SITE FABRICATION of pre-assembled units is speeding up construction of Essex Village, a new satellite community to house 3,500 persons in Hialeah, Fla., a Miami suburb. Developed by Coogan Davis, Inc., the $7,000,000 project eventually will include almost 600 two- and three-bedroom homes, a complete shopping center, 70 duplexes and 112 apartment units for rental. It is a self-sufficient community with all the municipal services of the city of Hialeah. Frame houses, located on lots 60x108 ft. sell for $6,700 for the two bedroom home types and $7,500 for a three-bedroom home. Veterans can finance the down payment on one of these homes through GI loans.

Work at Essex Village started in January, 1947. By the end of that year, about 350 homes were scheduled for completion.

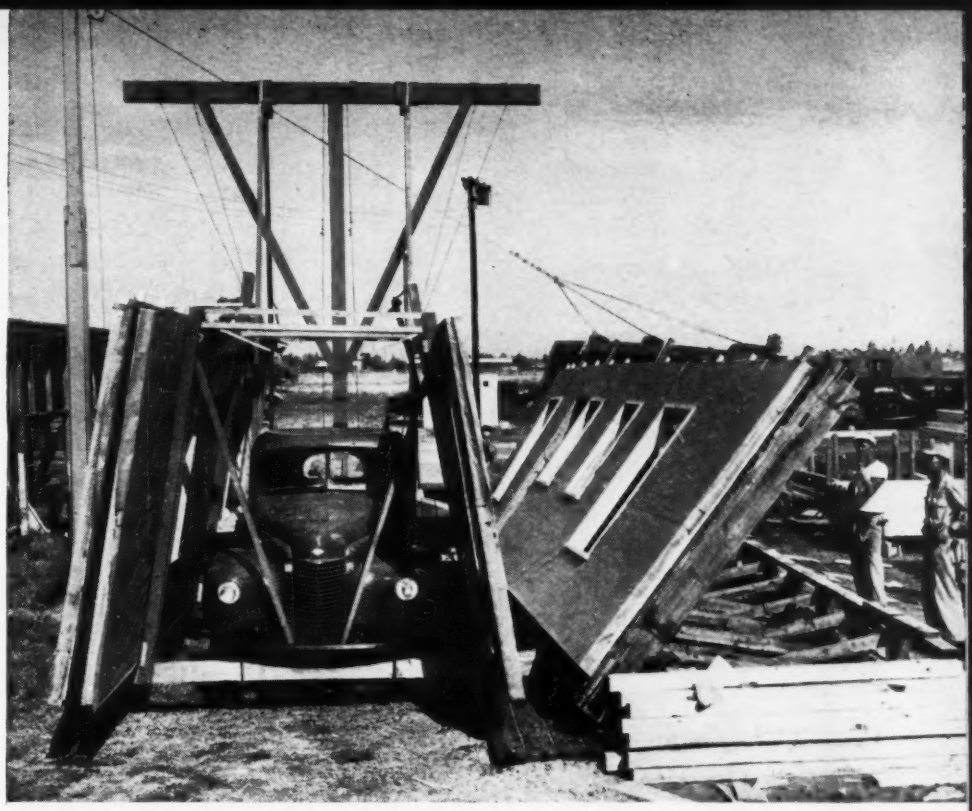
"We have planned our homes," said Mr. Coogan, "on the basis of materials available, to offset as much as possible high material prices and material shortages. We have endeavored to give purchasers all the essentials of a comfortable living and at the same time to keep our price range such

CONCRETE FOR FOUNDATION of house is delivered by truck-mixers (below) and screeded to smooth-surfaced monolithic slab on rock fill.

that the purchase of our homes is a possibility for a large group of veterans."

The form of house assembly is designed for maximum production. Virtually all lumber for the homes is pre-cut to exact measure in an assembly yard on the Essex Village project. Walls are assembled, one by one, with the use of a jig, in the assembly yard. As each wall is constructed it is loaded aboard a specially-rigged truck, and when four walls are completed, the truck rolls off to the site of the house. There, a crew unloads the four walls, one at a time, directly from the truck to their position on the prepared foundation, makes them fast, ties them together—all in about half an hour.

Gables are assembled in the same manner and are delivered by truck to the houses for placement. Most lumber needed for beams, rafters, partitioning, etc., is delivered precut and in exact amount to each individual job. Asbestos shingles are used for siding and roofs. The flooring is asphalt tile. There are 10 variations in design of the houses, in addition to two or three bedroom sizes. The locations on the lots are staggered so that the homes are not in a straight line. Different colors in shingles help to set the individual houses apart, as do different colors used for trim. Variations in porch designs go a long way in giving the homes individual appearances.



TRANSPORT OF WALL SECTIONS from assembly yard to building site is by specially rigged truck.

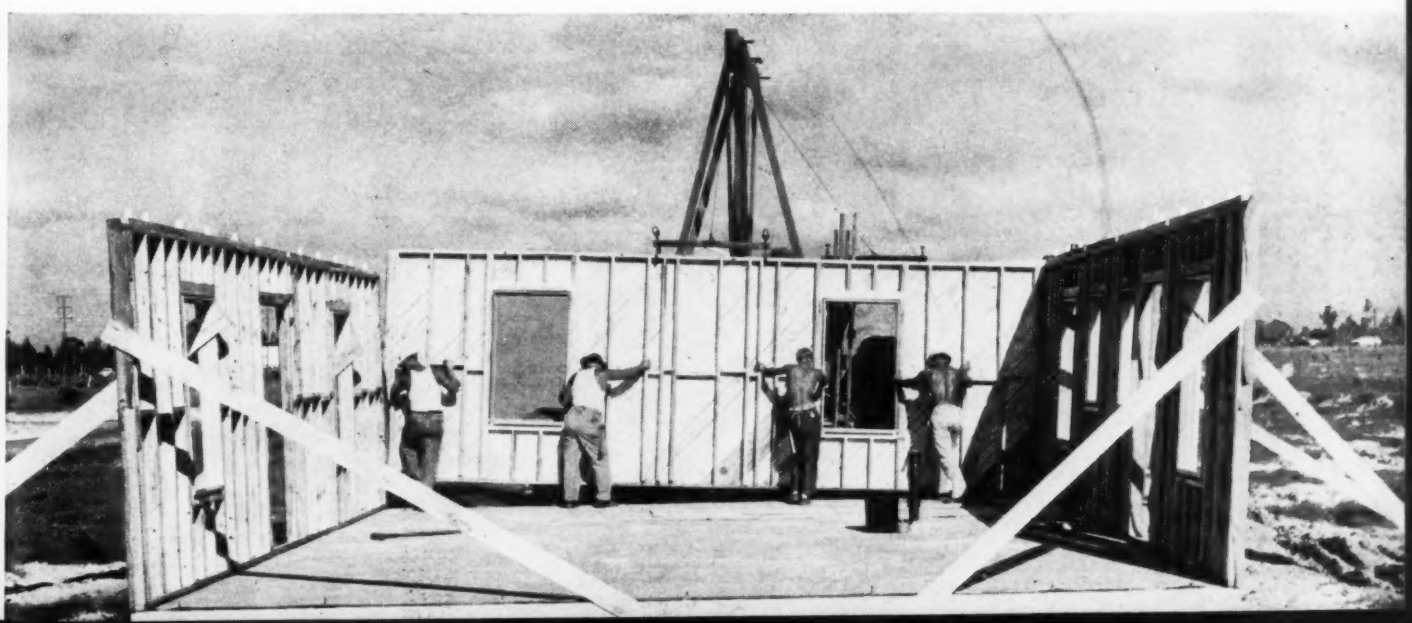
Florida Housing Project

Coogan Davis, Inc., has put in all the paved streets for Essex Village, developing the sub-division from entirely unimproved property.

The shopping center, to cost approximately $400,000 will house about 10 major stores, representing various types of business needed to make a "one-stop" center. A theatre is planned for the shopping center, to be added later. The business center has been laid out to provide ample off-street parking for about 100 cars. Apartment units and duplexes are to be located near the shopping center.

A considerable portion of the construction at Essex Village is done by subcontract. The subcontractors include: Streets, Troup

PREFABRICATED WALLS (below) are placed in position on concrete foundation. At rear, wall panel is being lowered to place by boom on truck.



COMPLETED HOUSES in $7,000,000 Essex Village development are priced at from $6,700 to $7,500.

Brothers; water mains and plumbing, Alexander Orr & Associates Inc.; electrical, Stewart Electric Co.; floors, Walton Flooring Co. and Lotspeich Flooring Co.; landscaping, Ward Landscaping; surveying, Biscayne Engineering Co.; painting, Art Heimer; abstracting, Drummond Title Co.; financing, Investors Syndicate. U. S. and National Gypsum furnish dri-wall materials; General Electric and Norge refrigerators; Mertland, hot water heaters; Crane, plumbing fixtures; A and B, electric ranges.

James W. Voorhies is the architect; John F. Beatty, project manager.

Special Rig Backfills and Tamps Canal Slopes

BY MOUNTING a backfill spreading skip and a pneumatic tamper on a special boom fitted to their Koehring 304 shovel, Arizona-Nevada Constructors are making short work of backfilling 1¼ on 1 sideslopes of over-excavated rock cuts on their Friant-Kern Canal job in California. At the rate of 700 sq. ft. per hr., the rig spreads and compacts layers up to 2 ft. thick of selected earth fill placed to prevent excessive overrun of canal lining concrete poured later.

The skip and tamper ride the double channel lower chord of the rig's 35-ft. live boom. Both are positioned along the boom by lines from the shovel hoist drums.

The skip resembles a skimmer scoop bucket. A hydraulic ram tips the bucket for controlled discharge for dumping and spreading. Material for backfill is windrowed in advance along the toe of slope, where the skip picks it up.

The tamper is a 9-in. dia. air hammer with a 30-in. stroke. It mounts a 24-in. dia. shoe which pounds the backfill down at 30 blows per min., compacting 700 sq. ft. of slope per hr. Air is furnished by a 315-ft. Ingersoll-Rand compressor towed by the shovel.

T. G. Lynch, co-owner of Arizona - Nevada Constructors, Phoenix, devised the unique equipment, which was built by Guntert & Zimmerman of Stockton, Calif.

USBR Photo

Gas Main Showed Under Busy Street

WITH AN EARTH AUGER and a pair of ratchet hoists, a small crew of the San Diego Gas & Electric Co. pushed an 8-in. gas main casing beneath busy Pacific Highway when prohibited from cutting the pavement to make the crossing. By alternately boring and jacking in 3-ft. stages, the 100-ft. installation was completed in 5 days.

All operations were done from the gas main trench, which was carried up to highway edge. For the job, the company's metal shop built a 5-ft. earth auger that fitted inside the 8-in. casing pipe. The auger was coupled by shaft to a large rotary air drill. Working within and ahead of the pipe, the auger drilled out 3 ft. of earth, then was withdrawn. Next, the casing was jacked ahead into the hole by two ratchet lever hoists. Hoists were hooked to the tail of the pipe, and were chained to timbers, as jacking deadmen, in a transverse slot at the head of the trench. The drill-and-shove procedure was repeated until the highway was passed, when a 4-in. gas main was slipped within the casing to complete the crossing.

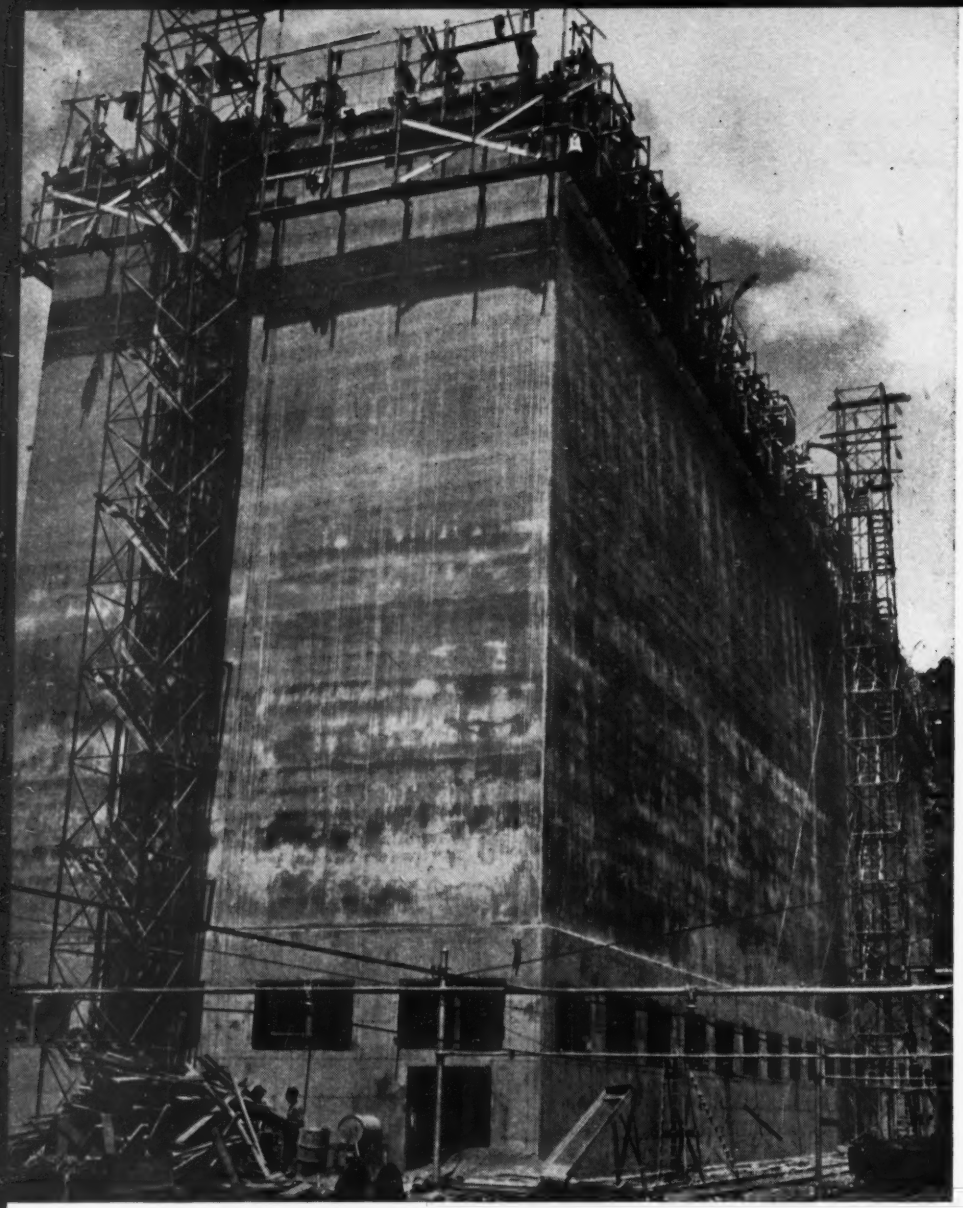
The installation scheme was worked out by C. P. de Jong, superintendent of the company's gas distribution department, and C. Wayland Capwell, engineer.

EARTH AUGER bores beneath state highway in San Diego, Calif., so installation of gas main won't interrupt traffic. Drill operates through 8-in. pipe that is forced into hole as casing for 4-in. main.

HUSKY CREW (below) proudly holds pneumatic drill that powers earth auger. Group completed underground 100-ft. pipe job in 5 days without disturbing highway pavement.

TWO HOISTS (below) pull casing, cradled on steel guide shoe, into bored hole. Hoists are anchored to deadmen in T-head of gas main trench, and pull pipe in 3-ft. moves.

CONCRETE



SLIDING FORMS reach top of 12,500-ton, 80-cell blending bin at West Virginia coal plant after week of pouring and jacking. Concrete is pumped to hopper at working level through pipe on far scaffold tower.

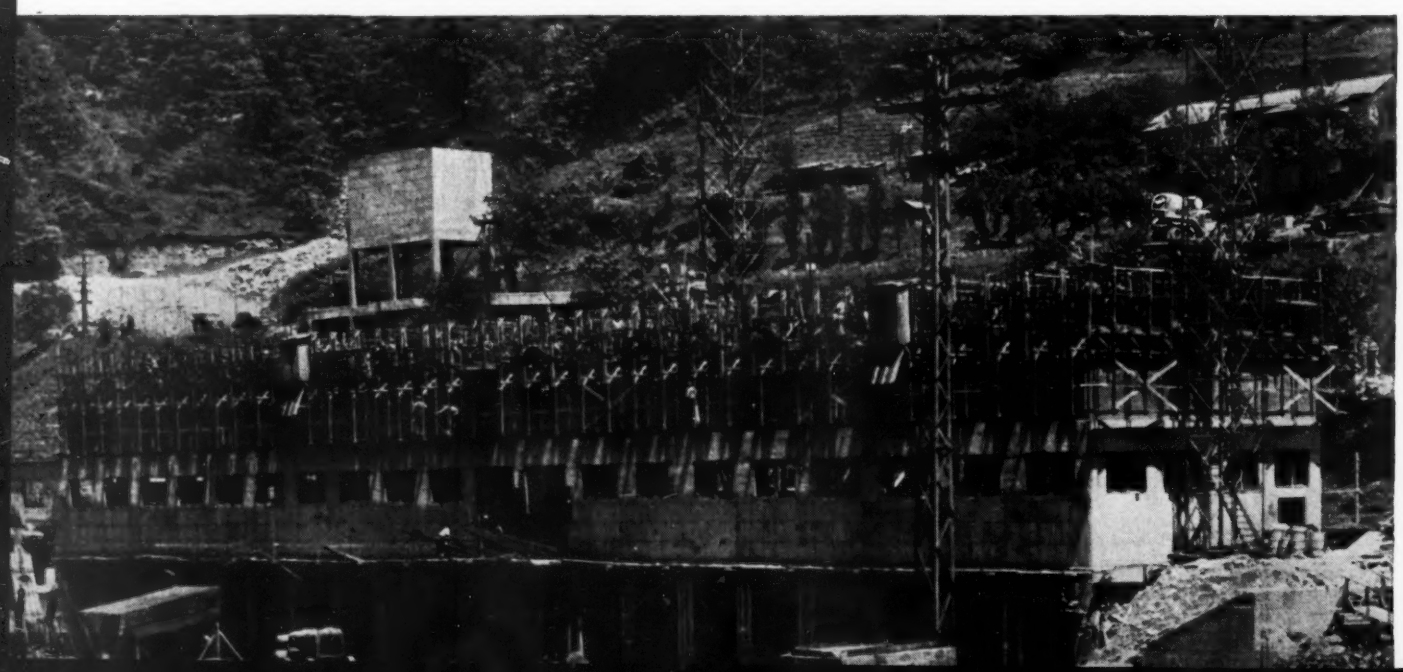
CONCRETE PUMPED to sliding forms for two huge coal bins simplified Rust Engineering Co.'s construction of coal-handling facilities at the Gary (W. Va.) mine of the United States Coal & Coke Co., where the contractors poured 20,000 cu. yd. of concrete in a valley so crowded and narrow that they were forced to set up their batch plant in another gorge 1½ mi. away. Concrete was mixed in transit between plant and pour site, where existing coal operations and rail and highway traffic continued uninterruptedly.

More than 5,000 yd. of concrete went into slip forms for a 12,500-ton blending bin and a 6,000-ton raw coal bin. The 232x46½-ft. blending bin—one of the largest concrete structures of its type ever built—rests on rock 36 ft. below first floor elevation. Concrete was poured in fixed forms to bin gate level 16 ft. above first floor, and in sliding forms for the rest of the structure.

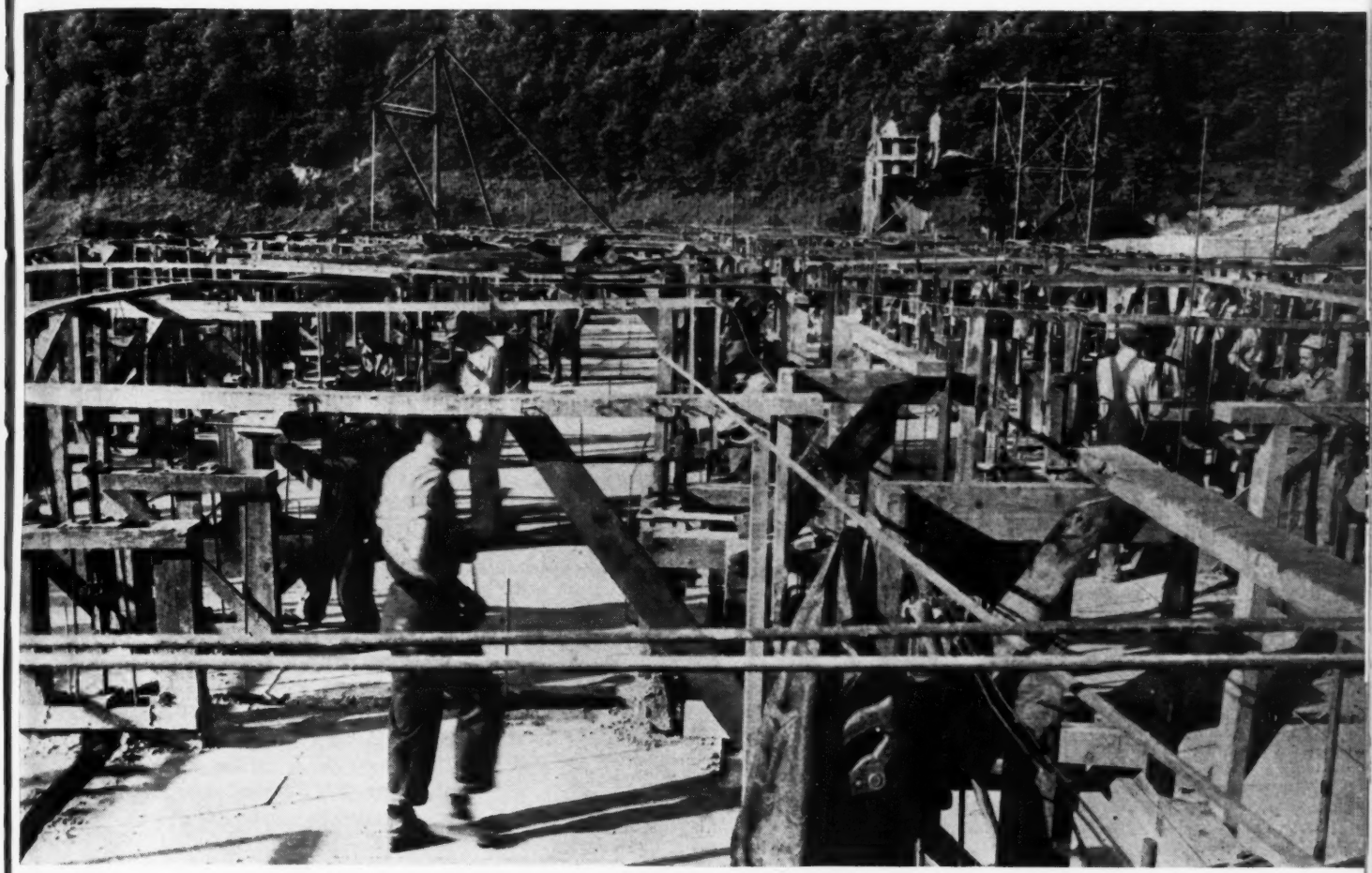
The slip-form section was 72½ ft. high, containing 80 storage cells 11 ft. square. Bin wall thickness tapered from 12 in. at wall intersections to 8 in. at the center of main walls, and from 7 to 6 in. on crosswalls. Reinforcing totaled 600 tons and varied from 1-in. rounds on 4-in. centers to ½-in. rods at 9 in.

Sliding forms were 1x4-in.

STARTING UPWARD (below) on 72½-ft. continuous lift are sliding forms for blending bin, lower 52 ft. of which was poured in fixed forms. On hillside at right are transit-mix discharge platforms and concrete pump.



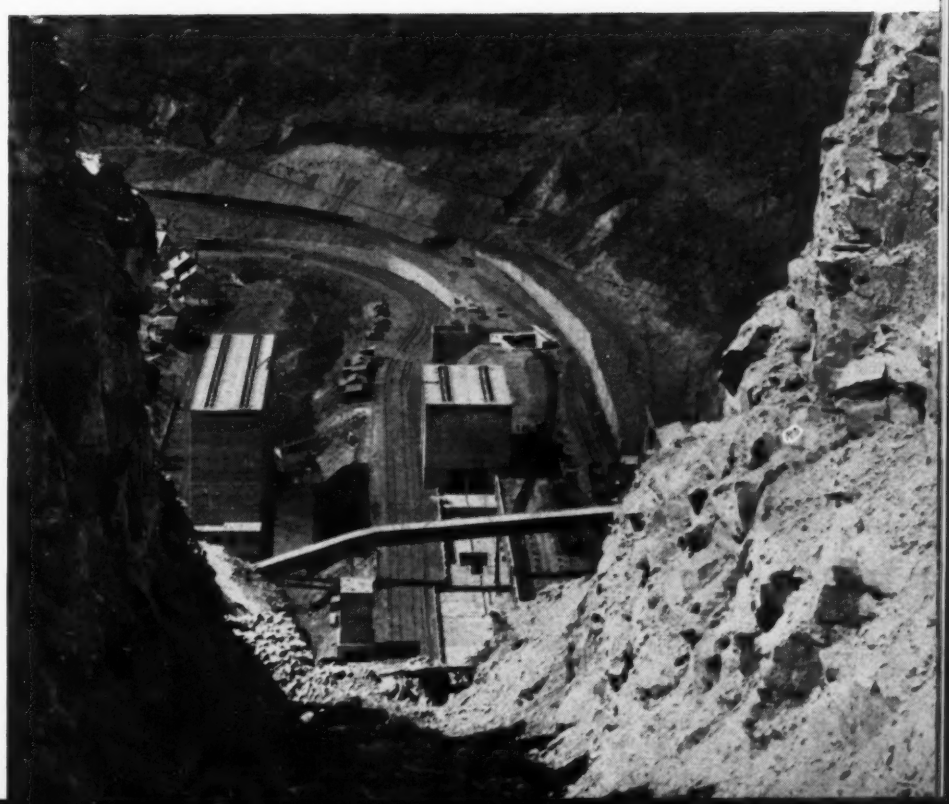
PUMPED TO HIGH SLIDING FORMS



WORKING DECK on sliding form is busy place with 265 jacks to be raised every 10 min. Job-built pivoted derrick with rigid boom (rear) lifts reinforcing bundles from ground to working level.

tongue-and-groove lumber set vertically, held by two lines of 2x8-in. walers. A working platform of 1x6's on 2x8-in. joists spanned the cells, and later served as a form for the roof. The entire assembly was raised by 265 Nelson screw jacks working against 17-ft. jack rods on 7-ft. centers.

Three 4½-yd. mixer trucks hauled concrete from a batch plant in the next valley. They traveled a highway on the hillside and, at the point nearest the blending bin, discharged off the road through a



CONTRACTOR was really cramped for operating space in narrow valley, while maintaining all existing facilities and traffic. Concrete batch plant and bunkhouse for workmen were built in two other nearby gorges.

dumping platform and hopper into a Rex 200 Pumpcrete machine.

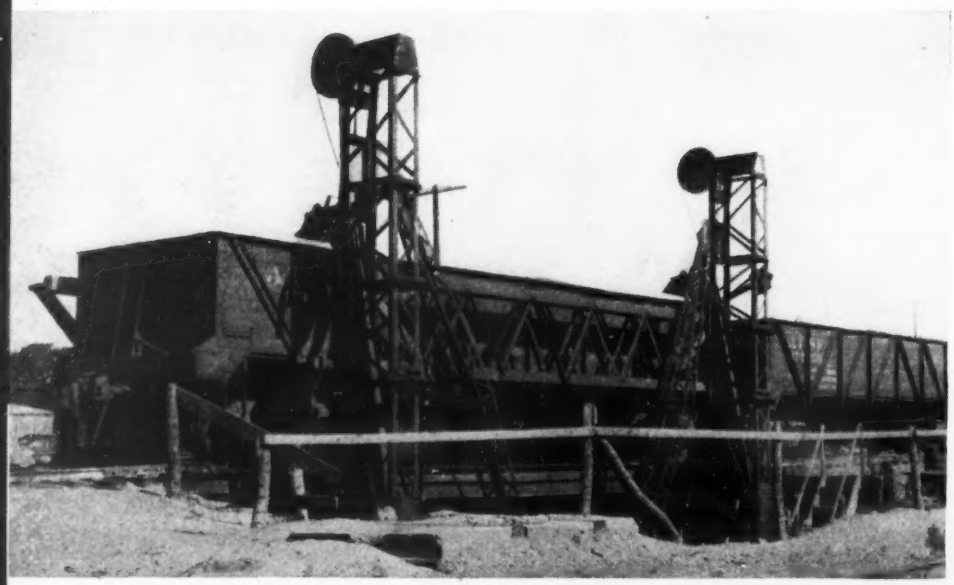
About 3,000 yd. of concrete was pumped 60 ft. horizontally and a maximum of 80 ft. vertically to the working deck of the sliding forms. A tubular steel scaffolding tower at the mid-point of the bin's long side supported the pipe, which was extended periodically as the forms were raised. On the working platform, concrete was buggied to the forms. These were raised 1 in. on each jacking operation at about 10 min. intervals to permit a pour rate of 6 in. per hr. After a week of continuous pouring, blending bin walls reached their full height. Then the sliding forms were pinned to the walls to support the working platform in position as a form for the roof slab pour that completed the concrete structure.

Construction procedure on the smaller 6,000-ton, 125x63-ft. raw coal bin was similar. Here concrete was pumped 300 ft. horizontally and 46 ft. vertically to slip forms for 32 cells 15 ft. sq., 46 ft. high.

The million-dollar project of Rust Engineering Co., Pittsburgh, included numerous other concrete structures and foundations for a high capacity coal washing plant being installed by McNally—Pittsburg Manufacturing Co. for the United States Coal & Coke Co., a U. S. Steel subsidiary. For Rust, S. W. Galloway was project manager, and H. V. Arnold was construction superintendent.

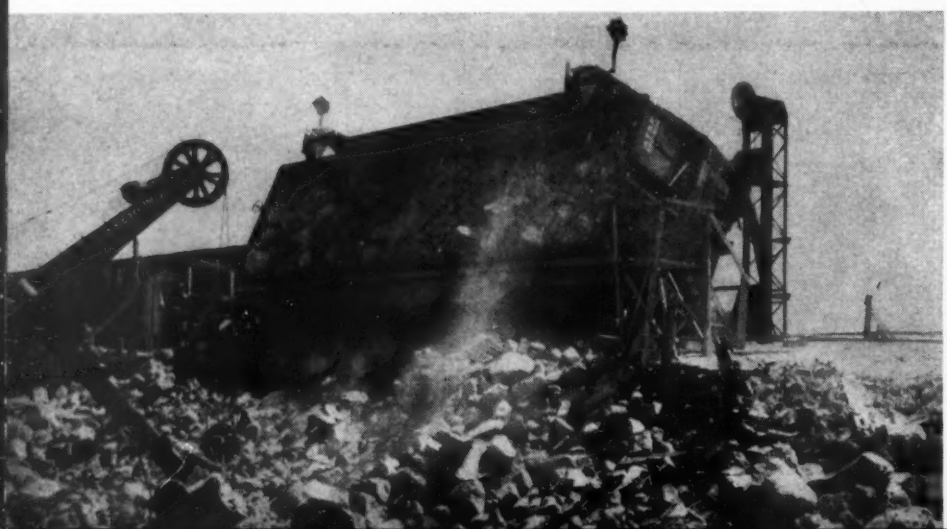
Car Dumper Unloads Riprap for Canton Dam

AT CANTON DAM on the North Canadian River in western Oklahoma the riprap subcontractor, A. C. Schroeder of MacGregor, Iowa, installed a car dumper to unload the 225,000 cu. yd. of rock required for slope protection. Quarry-run rock, delivered in gondola cars to a siding a couple of miles from the job, is dumped in



CAR LOAD OF ROCK for Canton Dam riprap rolls on to car dumper frame at siding near project for quick unloading.

OVER SHE GOES in a cloud of dust (below). Rock falls into pit alongside siding for loading by Koehring shovel into trucks for haul to dam.



OLD ROCK HOUND, A. C. SCHROEDER (below), of MacGregor, Iowa, takes Canton Dam job in stride, as he has handled millions of yards of rock in his long career as specialty contractor for this type of work.

DUMPER rolls car over far enough to disgorge entire load in few seconds. Here car nears end of tipping cycle with last few pieces falling on to apron above storage pit.

a few seconds into a pit where it is loaded by shovel into trucks.

The dam embankment is 2¾ mi. long, and averages 68 ft. high with slopes from 1 on 2 to 1 on 4, a vast expanse to be covered with riprap. Protection stone is placed from both on top and from toe of slope. Trucks are lowered or hauled up the slope, as the case may be, by a line from a tractor equipped with a side hoist. Trucks dump the rock in alternate strips running up and down the slope. Much hand work is necessary to build the rock blanket to specified depth and even thickness.

Project Personnel

The car dumper and rock placing are shown in the accompanying illustrations. Schroeder is subcontractor for Lytle-Amis, general contractors on the project, for whom George Stiers is project manager. The dam is being built by the U. S. Corps of Engineers, under the direction of Col. C. H. Chorpening, District Engineer, Tulsa. Ross Wylie is resident engineer.

TRACTOR on dam crest stands ready with hoist line to give trucks lift as they back up slope for dumping. Same tractor lowers trucks down slope from crest to cover upper part of embankment.

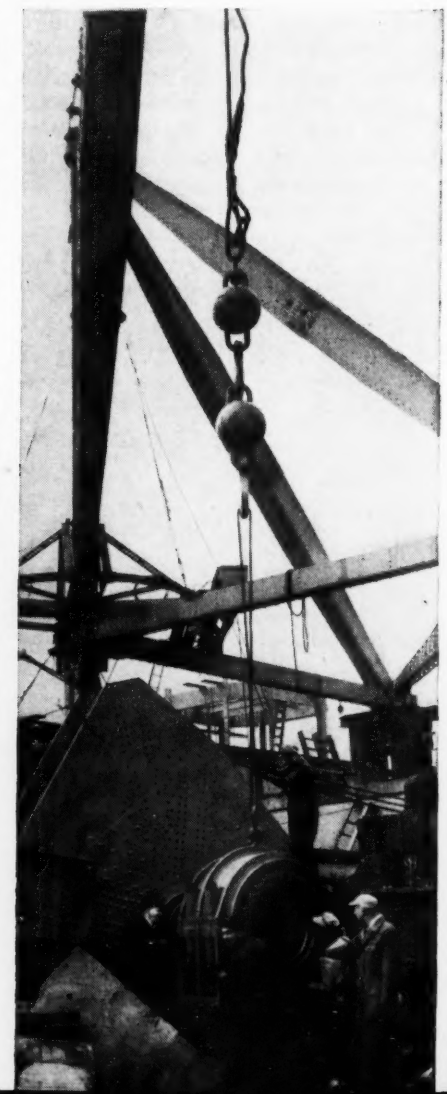
HAND CREWS (below), work dumped riprap into even, tight layer. This view shows how rock is placed in alternate strips up and down embankment.

CANADA'S BIG INCH pipeline is under construction to carry natural gas from Kinsella reserves to Edmonton, 100 mi. away. Wide World Photo

←

$20,000,000 BUILDING in Boston, Mass. will house long distance operating center of New England Telephone & Telegraph Co. Cornerstone is laid by President JOE E. HARRELL, assisted by WILLIAM M. NYE (with mortar bucket), vice-president of Turner Construction Co., which is building structure which will constitute key installation of telephone company in New England. At left is CHESTER N. GODFREY, executive partner of Cram & Ferguson, architects and engineers for this project.

GIANT ROLLER BEARINGS (below) will carry 16,000,000-lb. load during raising of bascule spans of North State St. bridge in Chicago. Anti-friction precision bearings carrying heaviest load (1,535,000 lb.) are in center truss trunnion and have 25½-in. bore; dimensions are 25x47x27 in. Overland Construction Co., Chicago, is building bridge under direction of W. W. DeBerard, City Engineer.



WORLD'S HIGHEST EARTHFILL, recently completed, is Anderson Ranch Dam (below) in Idaho, a 456-ft. tall structure containing 9,000,000 cu.yd. of material designed by the U. S. Bureau of Reclamation. This view shows upstream riprap surface of dam. Contractors for project are Morrison, Shea, Twaits & Winston Co.

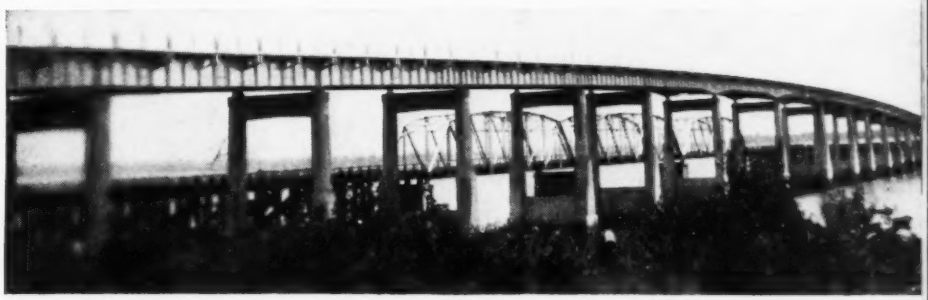
THREE-DECK JUMBO is major item of construction equipment employed in building Union Pacific Railway's new $8,000,000 Aspen tunnel 6700 ft. long which crosses continental divide through Uintah Mountains in western Wyoming. Tunnel eliminates last piece of single track on U.P.R.R. between Omaha and Ogden. Contractor for tunnel is Morrison-Knudsen Co., Boise, Idaho, for whom H. E. Carleton is project manager.

Wide World Photo

FOUR-LEVEL DIVING TOWER of bold design is unusual concrete structure built to Olympic regulations at Richards' Deauville Hotel, Miami, Fla. In all mass concrete, Clark & Storm Construction Co. used Zilicon waterproofing paste. Tower was designed by Igor Polevitsky.

Photo, Truscon Laboratories

SANTEE RIVER BRIDGE on U. S. Highway 15 near Parler, S. C., is 5,345-ft. long structure with 810-ft. approach on east side. Roadway 26 ft. wide is carried by steel deck plate girder spans supported by concrete piers. Span lengths vary up to 120 ft. Project costing $1,200,000 was constructed under supervision of C. R. McMillan, chief engineer, and W. J. Gooding, Jr., bridge engineer, South Carolina State Highway Department. Vincennes Steel Corp. was contractor for steel superstructure.



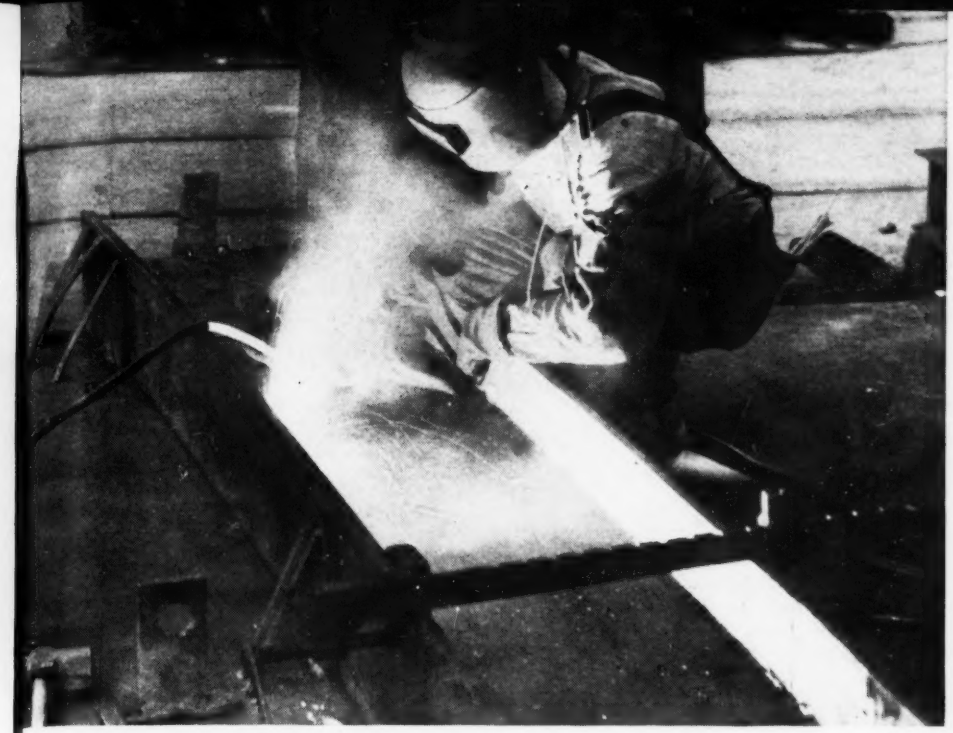
BOUND FOR BESSARABIA is this mammoth trenching machine (below) fabricated by Williams Bros. of Houston, Tex. Powered by Caterpillar diesel engine, machine will cut trench 2½ ft. wide by 9½ ft. deep for oil pipeline construction in Near East.

WITH "BIG BEN" in background (below), steel frame for new British House of Commons in London will provide structure to replace chamber destroyed by Nazi bombings. Designer of new structure, scheduled for completion in 1950, is Sir Giles Gilbert Scott.

Wide World Photo

PREFABRICATION BY WELDING in jigs of 93-ft. span rigid-frame church arches makes field erection simple job. Arches arrive at site in three sections—two posts with haunches and center roof support—requiring only two bolted field splices per arch.

Rigid-Frame Church Arches Prefabricated by Welding



TOP AND BOTTOM FLANGES are held against web by stops on template and also by clamps as operator tacks members together in primary fabrication. Tacks are 3 in. long, 24 in. apart.

AFTER TACKING, sections are removed from template for completion of fabrication by 5/16-in. double-fillet continuous weld made by skip and back-step procedure. This welding is by 5/16-in. rods at 375 amp. current strength for high arc speed and depth of fusion.

All Photos Lincoln Electric Co.

ARC-WELDED FABRICATION, making possible a clean, clear overhead and cathedral-like interior, is the outstanding structural feature of the newly-built Mission Baptist Tabernacle in Chicago. The church, 154x93 ft. in plan, has a seating capacity of 2,800. All arc-welding for fabricating ten rigid-frame steel arches for the structure framework was done at the Midland Structural Steel Co. plant in Cicero, Ill., with Lincoln shielded-arc welding equipment. The church was designed by Homer G. Sailor, Chicago architect, engineering was by the C. A. Metz Engineering Co., Chicago, and the steel was erected by the Kenwood Erection Co., Chicago, in only five days.

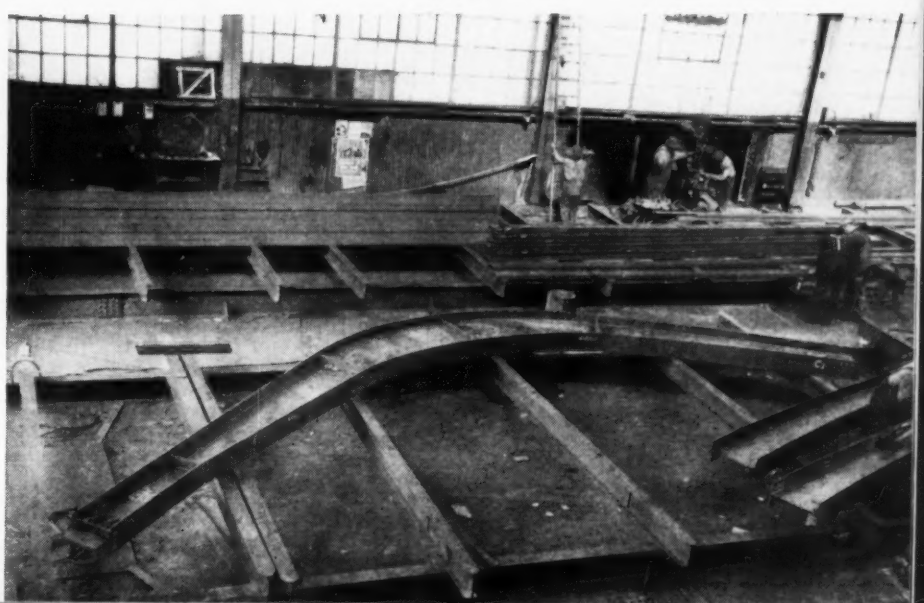
Arches in Three Sections

Each of the rigid-frame arches is made of three sections: two 15-ft. posts carrying the haunches, and a center roof support rising 33 ft. above the floor. Sections are joined by bolted field splices. Members are made up of a ½-in. web plate, varying in width from 18 in. to 3 ft., with ¾x10-in. flange plates welded top and bottom to the web.

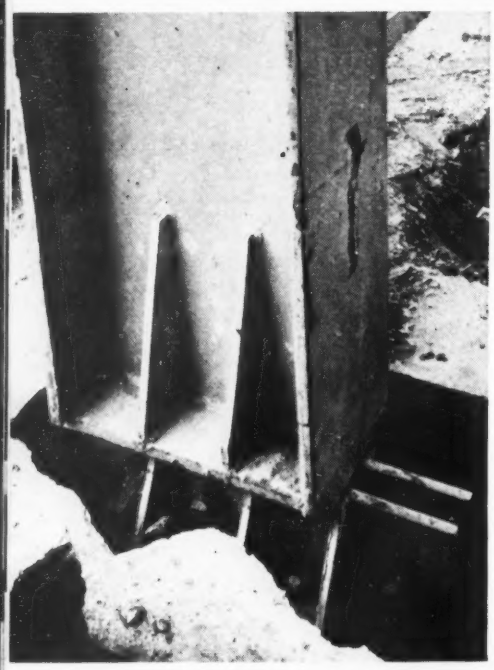
Shop fabrication started on a layout template, where the flanges were tack welded to the web. Both web and flange steel were set into the template within stops, and the flanges were forced to a close fit along the web by steel wedges. Clamps, moved along the members to tacking points, assured an absolute tight fit during welding operations. Fleetweld 47 rods, 5/16-in. dia., were used for the tacking. Tack welds 3 in. long and 24 in. apart, were made on both sides of the web. The procedure of pre-tacking in a fixture minimized distortion and reduced contractional stress.

After tacking, the members were taken out of the template, laid flat and fabrication was completed with a double fillet weld with 5/16-in. leg, using AWS E-

POST-AND-HAUNCH SECTION is laid out on beam supports for final welding. Here angle struts are added for stiffening end sections.



WOOD ROOF follows simple erection of prefabricated arches. Wind bracing is in two end panels. Heavy longitudinal beam strut at top of haunch extends above top flange, replacing roof joist at that point.



BASE CONNECTION at foot of columns consists of extending tongue of column section pinned through slot in base. Pin at right is for rod and turnbuckle cross-tie to keep base points from spreading.

6013 electrode. In the welding procedure, the fabricator employed a skip and back-step technique, welding half of one side of the member then the other.

The completed sections were transported to the job site, erected and joined with bolted splices.

The cost of shop fabrication of this arc-welded arch was reported to be approximately 35 per cent less per ton than for conventional construction.

Midland Structural Steel Co. states that this type of fabrication was easy to handle in the shop and used a minimum amount of equipment. Prefabrication minimized the field work. In this case, Kenwood Erection Co. was able to complete the field erection of the steel for the entire building within 5 days with a small force of men.

PREFABRICATED ARCHES (below) give clear span to auditorium at low cost with pleasing appearance.

LEGAL ADVENTURES OF TRACTOR CONN

By LESLIE JOBB

By recounting the experiences of Tractor Conn, who symbolizes the average contractor, this series of articles, each based on the decision of an American court and presented in plain, non-legalistic terms, is designed to help construction men avoid costly legal pitfalls.—Editor

The Case of the Dangerous Erasure

"Take my note for the balance of my account?" the owner queried.

"Yes, if you'll get your brother John to indorse it," Tractor Conn agreed. He accepted the note and placed it in the Contract Bank for collection.

A week later, John, the indorser, strolled into Conn's office.

"Have you a note indorsed by me?" he asked.

"I have and I haven't. I got the note, but I left it down at the bank for collection," Conn answered, so the indorser made his way to the bank.

"I understand that you're holding a note made by my brother in favor of Tractor Conn and indorsed by me," John announced and the cashier confirmed his impression.

"At the time I indorsed the note there was an understanding between my brother and me in reference to a certain business matter and it wasn't carried out," the indorser explained.

"What did you want us to do?"

"You know that my brother's good for three times the face of the note. If you'll just mark my indorsement off the back, it will fix everything up all right," John the indorser proposed. The cashier located the note and drew two heavy red lines through the indorsement.

Time passed on, according to a habit which it has, the note fell due, the owner was in bankruptcy, the indorser refused to pay, and Tractor Conn sued the bank in the Georgia courts.

"Where the pledgee permits the indorser to erase or withdraw his indorsement from the note without the consent of the pledger thus rendering the note insolvent, such action on the part of the pledgee amounts to a conversion of the note, just as much so as if he should sell the note and receive the value in money therefor," was the reasoning of the Court set out in 117 Southeastern Reporter, 741.

The Case of the Hasty Payment

The salesman checked over Tractor Conn's order for general supplies.

"How'll we ship?" the salesman queried.

"Oh, just the regular way, and you can draw a 30-day draft, with usual discount if I pay it when presented," Conn directed.

Ten days later the draft arrived at the Contract Bank before the order had reached the freight shed.

"Might as well pay that now and take the discount. I have the ready and available cash," Conn assured himself, took up the draft and had it stamped "paid." The order arrived the next day, and the precipitate contractor found that the quality was not as represented.

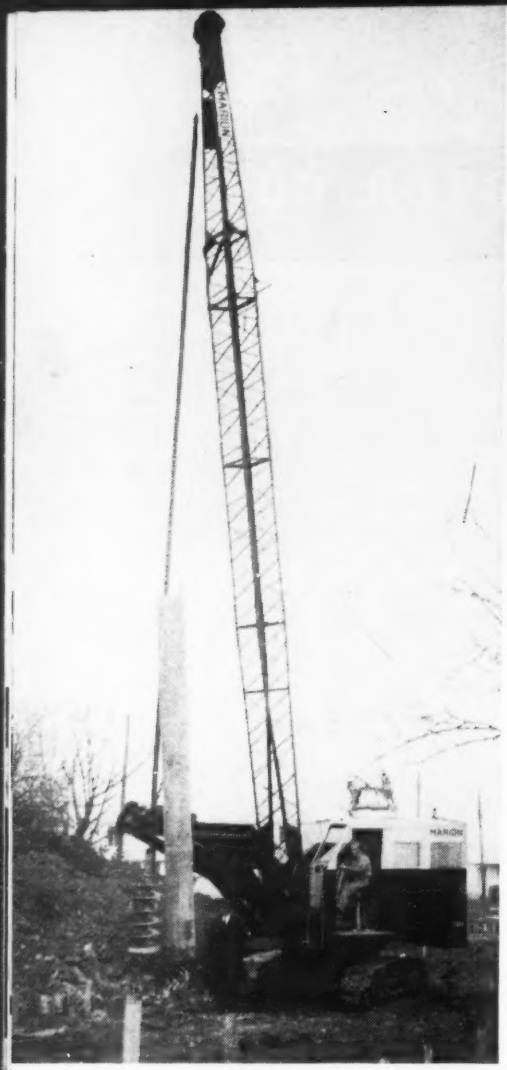
"That stuff isn't worth carting away," he told the freight agent, laid the facts before his attorney and instructed him to sue the salesman.

"You might have had a cause of action once, which we do not admit, but you're too late now. When you paid the draft you waived any right that you had of suing us for damages," the salesman contended.

"That might be true if the order had arrived ahead of the draft," Conn's attorney retorted.

And the Ohio courts in a case reported in 27. O. St. 648, decided that Tractor Conn, by paying the draft before he had an opportunity to examine the shipment, had not lost the right to sue for damages for a breach of the original contract of sale.

More Legal Adventures of Tractor Conn Next Month



STRONGBACK 70 ft. long picks up and lowers into trench in bed of Hudson River at Poughkeepsie, N. Y., assembled 72-ft. sections of 36-in. flexible joint cast-iron pipe for waterworks intake line 1,000 ft. long. On underside of strongback are heavy timber saddle blocks shaped to fit pipe which is supported by cable slings, one for each length of pipe, held fast by special quick-releasing hook readily operated by diver. Assembled sections of pipe were handled by derrick barge with 100-ft. boom of 45-ton load capacity at 30-ft. radius. Contractor for project was Merritt-Chapman & Scott Corp. Harold R. Dean was superintendent of Poughkeepsie Board of Public Works, and Malcolm Pirnie served as consulting engineer. Flexible joint cast-iron pipe was supplied by United States Pipe & Foundry Company.

HOW ...they did it

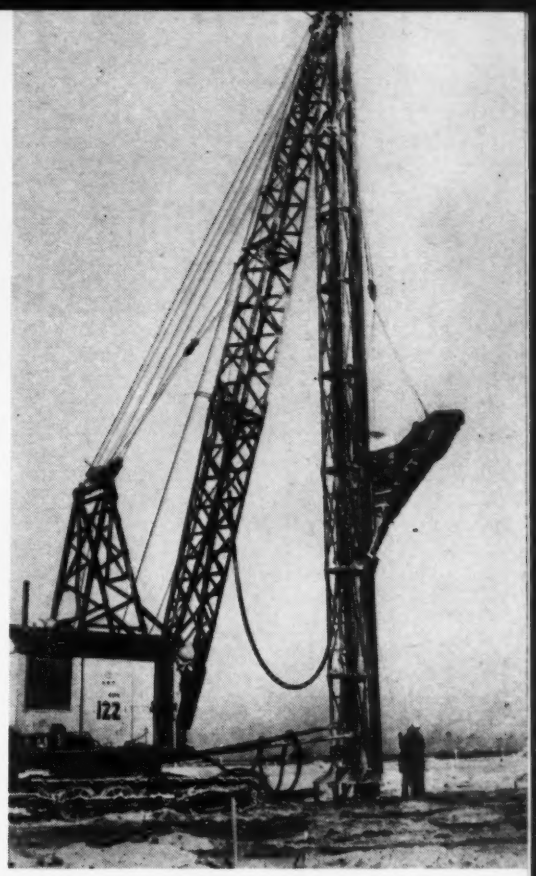
TO CUT HOLES for reamed foundation piles, A. H. Beck Foundation Co., San Antonio, Tex., converted Marion 331 shovel-crane into this rotary drill rig. Regular shovel boom is replaced by welded stub boom equipped on its outer end with a rotary drill, chain-driven by shovel crowding mechanism. Earth auger on long drill rod handled by boom digs holes up to 60 ft. deep.

IMPROVISED DRAGLINE (below) is developed by Robert Ryan to handle molybdenum ore at Climax, Colo. Bucket is operated by Caterpillar diesel tractor equipped with cable-controlled bulldozer.

ENTRAINED AIR IN CONCRETE is measured by this meter (below) in less than 10 min. Sample of fresh concrete placed in test vessel is subjected to pressure, usually about 7½ psi. by hand air pump. Then, since volume of air in concrete sample varies inversely as pressure, volumetric percentage of entrained air may be read from water reduction in graduated glass tube on apparatus. Equipment was developed by Carl A. Wenzel in research laboratory of Portland Cement Association.

TO BAN CORROSION TROUBLES at points not easily accessible for inspection and maintenance, welded deck plates of wrought iron were installed on this ballast-type bridge of the Pennsylvania Railroad near Washington, D.C. Wrought iron deck plates form water-tight base for railroad ballast and provide protection against corrosion of structural beams to which they are welded.

EXHAUST GASES from diesel engine of Allis-Chalmers tractor-shovel working underground for Eagle-Picher Mining Co. in Oklahoma, are rendered non-toxic by feeding oxygen into exhaust manifold from tank mounted on rear of machine. With oxygen added through pipe, hot exhaust gases burn and dangerous carbon monoxide is converted into carbon dioxide in quantities harmless to men.



VERTICAL SAND DRAINS to expedite sub-surface soil consolidation are installed by Macco Corp. and Morrison-Knudsen Co. on 5-mi. length of Bay Shore highway around San Francisco, Cal. With aid of piledriver rig, steel casing is jetted to depths up to 60 ft., forming 18-in. dia. hole into which sand is poured by raising and tilting skip to fill hole as casing is withdrawn. Thus a sand "pile" is formed to provide escape for sub-surface water making highway fill available for paving in relatively short time.

FACE CLEANING of Wayne County courthouse, Detroit, Mich., is done with aid of five Worthington portable air compressors (below) assembled in front of entrance stairway, to operate sand-blasting equipment of Mason Building Cleaning Co., which used 275 tons of sand during 8,000 man-hours of work in removing grime from 250,000 sq.ft. of facade of structure as shown at left of photograph in comparison with drab appearance of right-hand half of building.

LIGHT STEEL ERECTION on new building for Union Tractor & Equipment Co., Calgary, Canada, is handled by Caterpillar D6 tractor (below) with Hystaway boom serving as mobile crane.

By Night . . . Under job floodlights fleet of 5-yd. truck mixers delivers concrete to receiving hoppers that supply hand buggies on 22-hr. pour for Oakland building foundation slab.

It's a Long Time . . .

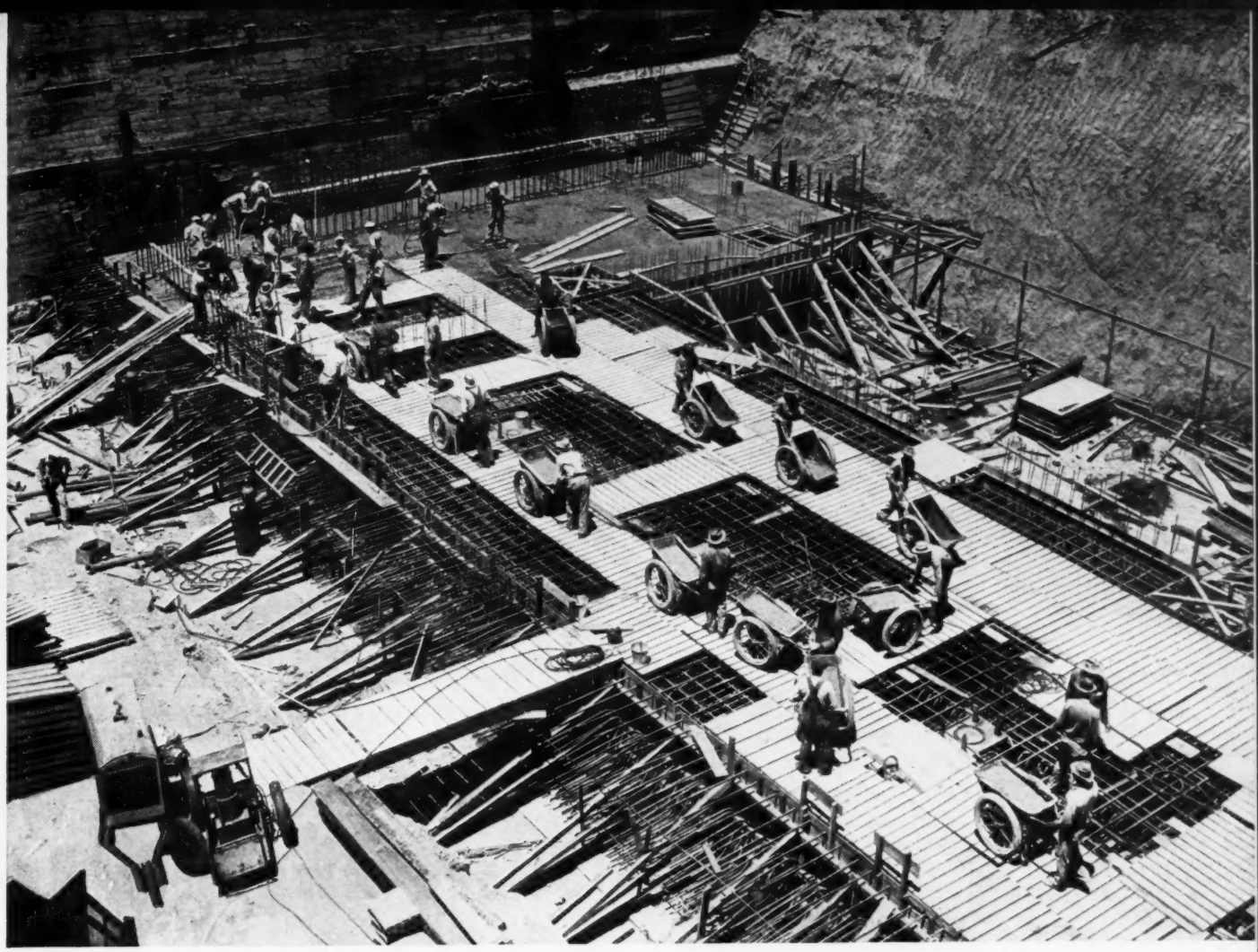
22-Hr. Continuous Pour on Slab

ORGANIZING a continuous 22-hr. pour for the foundation slab of the new Pacific Telephone & Telegraph Co. building at Oakland, Calif., called for effective cooperation between the Dinwiddie Construction Co., contractors, and Pacific Coast Aggregates that supplied the ready-mixed concrete.

Top of the foundation slab is 28 ft. below street level; its 5-ft. thickness contains two layers of 1¼-in. steel bars on 6-in. centers, plus dowels and other steel. To prevent deflection of the reinforcing under weight of the train of concrete buggies, separate supports of steel bents 8 ft. apart carried the buggy runways. These bents, of ¾-in. bars, rested on a 4-in. concrete pad that had been poured prior to placing of the reinforcing steel, and were braced by welding to the 1¼-in. steel.

Pour schedule began at 5 a.m. with a crew totaling about 50 men. Included were 35 laborers, of which 20 were assigned to concrete buggies; four 2-man crews on Viber Co. concrete vibrators; three or four carpenters on moving runways plus a few men on miscellaneous jobs. Concrete was delivered from a central mixing plant by a fleet of fourteen 5-yd. transit mixers.

Two receiving chutes to hoppers with double outlets, loaded four buggies simultaneously. With judicious routing of traffic over the runways, concrete flowed in an almost continuous stream into the forms and around the closely-spaced steel. The relatively large number of vibrating crews was desirable because of dry concrete; a slump of only 2 to 4 in. Reason for this low slump was the unbal-



By Day . . . Twenty concrete buggies move in continuous procession until 1,516 cu.yd. is in place around closely-spaced steel in 5-ft. slab that underlies new telephone building. Runways are supported on steel bents clear of reinforcing steel.

anced loading on the foundation and the need for avoiding settlement. The concrete was designed for 4,000-lb. strength and laboratory tests showed this to be exceeded by 25 percent.

When a breakdown occurred in the central mixing plant during the pour, the trucks were merely re-routed to another plant operated by the same company. Despite the fact that this involved a somewhat longer haul through city traffic, the job was completed by 3 a.m. on the morning following the start of the work, a total of 22 hours of continuous pouring.

The men on the job in this operation were Andrew M. Bryne for the Pacific Telephone & Telegraph Co., George Horne, superintendent for the Dinwiddie Construction Co., and Clyde Wood, representative of Pacific Coast Aggregate.

To Serve Illinois Contractors Better

AMONG SEVERAL new plants opened up recently by construction equipment distributors to better serve contractors is that of Kennedy-Cochran Company at Bellwood, Ill., just west of Chicago. A total of 31,000 sq. ft. of parts, service, office and display space is inclosed in modern brick, steel sash and glass construction. The plant's efficient service shop is completely equipped for maintenance, repair or overhaul of contractors' equipment.

Kennedy-Cochran handles Allis-Chalmers, Gar Wood, Baker, Foote, G. M. Diesel, Buckeye Traction, Bucyrus-Erie and LaCrosse Trailer products in northern Illinois and northwest Indiana districts. Principals of the firm are Don D. Kennedy, president; Paul Cochran, vice-president; and Paul A. Blakely, secretary-treasurer.

Formidable bluff . . .

Spur of Blue Mountain across Susquehanna River from Sunbury, Pa., had to be sliced off to make way for new railroad line alongside U.S. Rt. 11 without disrupting highway traffic.

Tackled by bulldozer . . .

Bench is swamped out at south end of project by Caterpillar bulldozer to start cut for

Bluffs Sliced Away for Rail Sp

In charge . . .

Running job are P. T. TOBIN, superintendent for Empire Construction Co., and T. ROBERTS, field engineer for Reading R.R.

A MILLION-DOLLAR SPUR TRACK, 8,000 ft. long, from the Reading Co.'s main line to a new Pennsylvania Power & Light Co. plant at Shamokin Dam near Sunbury, Pa., was carved from a mountainside while traffic was maintained on an adjacent parallel highway. Empire Construction Co., New York City, contractors for the

Clear of traffic . . .

To clear the road for highway traffic, Athey wagon, below, backs into bluff where Caterpillar grader scrapes loose rock from road.

railroad spur 8,000 ft. long leading to new power plant at Shamokin Dam.

Gouged by shovel . . .

Shovel attacks toe of bluff, loading into Caterpillar DW 10 scraper while Athey wagon awaits load. Hauling equipment was strung out in continuous rotating cycle, to prevent jamming up and blocking of traffic.

Spur Alongside Busy Road

job, put their hauling units on a continuous rotating cycle to keep them from jamming up the highway, which they traveled during part of their average 3½-mi. haul.

Accompanying photographs show construction of the new spur. Half its length is in a side-hill cut 22 ft. wide through shale and limestone, half is on embankment with maximum height of 35 ft. Two bridges carrying the spur over highways were also included in the work.

E. L. Gosnell is chief engineer of the Reading Co., for whom Bruce Schaffner was resident. P. T. Tobin was superintendent for Empire. Beckwith Machinery Co., Pittsburgh, who furnished these pictures and job information, serviced the equipment for Empire Construction Co.

Trimming the grade . . .

Rock is spread and leveled on fill by Caterpillar bulldozer (below). This fill shouldn't settle.

On the fill . . .

Over side of fill, which carries rail spur to new power plant, goes 14 yd. of rock dumped by Athey wagon (below).

1949 — Can Be a Good Year Too

You can expect good business to run on well through 1948.

But old-time competition is close upon us.

And 1949 will be a critical year for all of us – making lower taxation imperative NOW.

These are the main conclusions drawn from a nation-wide survey of industry's plans for new plants and equipment which McGraw-Hill has just completed. Here are the major findings:

1. Capital expenditures in 1948 may be a little lower — but at the most only 8% lower – than in 1947.
2. In 1949 capital expenditures may decline. 1949 plans are still fluid. However, those which have been projected now show a falling off. (Washington planners, please note: Current official attempts to discourage capital expansion may turn out to be superfluous – or downright dangerous.)
3. Industry's initial postwar rebuilding will be 85% complete at the end of 1948. When this first wave of deferred maintenance and expansion is finished, American industry will have more than half again the capacity it had in 1939. This does not mean the end of needed capital expenditures. Business will need to invest much more. (President Truman sets an investment goal immediately ahead of $50 billion.) But it does mean that tough competition is returning fast.

• IF YOU WANT *full details of the McGraw-Hill survey of Capital Expenditures, which is summarized in this editorial, write to the Economics Department, McGraw-Hill Publishing Company, 330 West 42nd Street, New York 18, N. Y.*

These are solid facts, based on plans which are firmly made by a broad cross-section of American industry and which the McGraw-Hill survey revealed.

The greatest contribution of this survey is the information it supplies on business plans for the purchase of new plants and equipment. What business planned to do about such expenditures was by far the biggest unknown element in the 1948 outlook. For, if business planned to slash its outlays for plants and equipment this year, that fact alone could bring a sharp downturn in business.

In making this survey, McGraw-Hill researchers all over the nation personally interviewed top executives of companies selected to make up a scientific cross-section of industry. Each executive was asked to give, *not his opinion* about general business trends, but *factual details* about his company's plans for 1948. By adding together the plans of the companies interviewed, McGraw-Hill has secured, for the first time, a reliable picture of what business plans to do in the months ahead.

Here are plans for 1948 and 1949, as revealed by the survey:

1. Industry still needs more than a year to finish its initial postwar maintenance and rehabilitation program.

Among manufacturing industries, top executives report that 64% of their program for the immediate postwar period is now complete. According to present plans, 85% will be installed by the end of this year even though some manufacturing industries still have a long way to go. For instance, oil companies will complete only three-quarters of their presently planned expansion program by the end of 1948.

2. Business may spend less on new plants and equipment this year than the record $16.1 billion spent last year. But the decline

probably will be negligible and certainly will not be great enough to bring on a business recession.

At the time McGraw-Hill interviewed top executives, some companies had not yet approved their 1948 capital budgets. Under the extreme assumption that those particular companies will make *no* capital expenditures in 1948, industry's 1948 bill for new plants and equipment will run to $14.9 billion, or 8% below last year's record figure. Under the more realistic assumption that those companies will cut their capital investment only as much as the companies which had already drawn up their plans for 1948, industry's 1948 capital budget will run to almost $15.8 billion, a decline of only $300 million from 1947.

Thus the over-all conclusion of the McGraw-Hill survey is that capital expenditures by business will be only slightly lower this year than last.

3. Business executives will not slash their 1948 capital budgets unless they are convinced that a real slump is in the offing—and they are not convinced now.

Almost two-thirds of all manufacturing companies say they would not cut capital budgets sharply even if business activity declined 20%. What is more, even a 15-20% boost in wage rates would have little effect on projected capital budgets. If wages go up, 57% of manufacturing companies would not change their capital budgets, 26% would increase them, and 17% would cut them.

4. Most executives look for an increase in their company's sales this year.

More than half of all manufacturing companies are planning on a sales increase over last year of 10% or more. A third of them say sales will be about the same as in 1947. And fewer than 10% look for lower sales.

5. Manufacturing companies will finance much of their purchases of new plants and equipment in 1948 from funds set aside out of past or current earnings.

Utilities and railroads, on the other hand, must go to the securities markets or commercial banks to finance most capital expenditures.

Although manufacturing companies say they can finance this year's capital expenditures in large part from current profits and past savings, all evidence indicates that, to do so, they will use up most of the funds they earmarked during the war for this purpose. So in 1949, industry must go to the capital markets or to the commercial banks if it is to continue to spend for capital purposes. If the securities markets continue to lie in the doldrums, *as they will under present tax laws,* only companies with triple A credit ratings will be able to raise funds that way.

6. Purchases of new plants and equipment may fall off in 1949.

The McGraw-Hill survey collected all available evidence on plans for 1949 capital budgets. Fewer than 40% of all manufacturing companies now have definite plans for 1949. Of those that have plans, 45% intend to spend less than in 1948, 30% plan to spend the same amount, and a quarter expect to spend more. These preliminary decisions would seem to indicate that capital investment may fall off in 1949.

7. Industry's production capacity in 1949 will be far above prewar.

Manufacturing capacity will be more than 50% greater than in 1939 once the present wave of postwar building is complete. Almost a third of all manufacturing companies report that their capacity will be double or more than double the prewar figure. Thus, 1949 may see a huge increase in production of many things that now are hard to buy.

The last two points in this summary mean that 1949 will be a critical year. We must forestall a sudden drying up of capital expenditures in that year. We must be able also to absorb a great outpouring of production both of capital and consumer goods.

What will happen to business in 1949, therefore, will depend on how successful we are this year in dealing with such momentous problems as taxation, foreign aid and prices. But 1949 *can* be a good year too.

The next editorial in this series will discuss the pivotal problem of taxes.

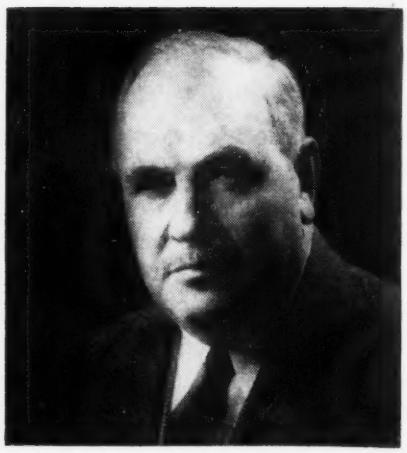
President, McGraw-Hill Publishing Company, Inc.

THIS IS THE 65TH OF A SERIES

Present and Accounted For···A PAGE OF PERSONALITIES

FOR SECOND SUCCESSIVE YEAR American Road Builders Association at its annual meeting in Washington, D.C., Jan. 26-29, elected as president J. T. (Tom) CALLAWAY, assistant to vice-president, Goodyear Tire & Rubber Co., Chicago, Ill.

A. E. JOHNSON has been appointed chief engineer of the Arkansas State Highway Department, filling vacancy created by recent death of W. W. Zass. Native of Harrison, Ark., Mr. Johnson attended University of Arkansas and has been employed by Arkansas Highway Department for 20 years in positions ranging from rodman to assistant to chief engineer. He has served as vice-president of Southeastern Association of State Highway Officials.

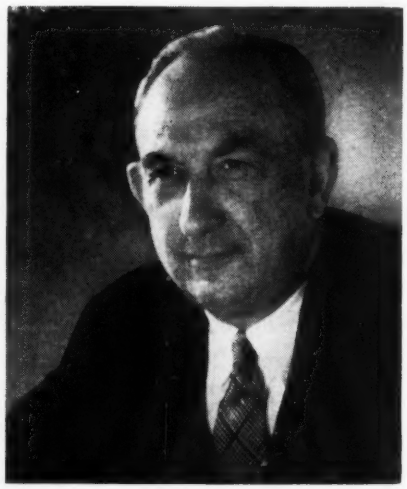


JOSEPH P. WOLFF, Commissioner Department of Buildings and safety engineer of City of Detroit, has been elected chairman of board of governors of Building Officials Foundation, succeeding Andrew J. Eken, president of Starrett Bros. & Eken, New York building firm. Before he became city official in Detroit, Mr. Wolff was engaged in building work in that city. He is director of Building Officials Conference of America.

A. M. MAXWELL of Standard Oil Co. (Ohio), Cleveland, is serving as president and chairman of executive committee of Asphalt Institute, New York, N. Y.

→

RICHARD E. DOUGHERTY of White Plains, N.Y., took office as president of American Society of Civil Engineers at that organization's annual meeting in New York Jan. 21-24. Mr. Dougherty is vice-president of New York Central System, which he has served since 1902. He is graduate of Columbia University where he served as instructor in Department of Civil Engineering. He has been chairman of Grade Crossing Committee of Association of American Railroads. In American Society of Civil Engineers, Mr. Dougherty has been director and vice-president. He has long been active in civic affairs as member of New York Mayor's Business Advisory Committee and Committee on Ports and Terminals, West Side Association of Commerce of New York, and New York State Chamber of Commerce.



JOHN A. VOLPE (below), president, Volpe Construction Co., Malden, Mass., has been elected president of Associated General Contractors of Massachusetts of which he is charter member and past vice-president.

FRANK R. JOSLIN (below) has been appointed assistant construction manager for New England Power Service Co., Boston, Mass. He studied at Worcester Polytechnic Institute and joined the then Power Construction Co. in 1928. Mr. Joslin has been active in transmission engineering and construction in field of New England Electric System.

CHARLES H. WAGNER (below), according to recent anouncement by Col. W. E. Potter, district engineer at Kansas City, Mo., for Corps of Engineers, Department of Army, has been appointed project engineer on Harlan County dam, integral part of "Pick-Sloan" plan, located on Republican River near Alma, Neb. He has had extensive experience on construction of locks and dams in upper Ohio system of flood control.

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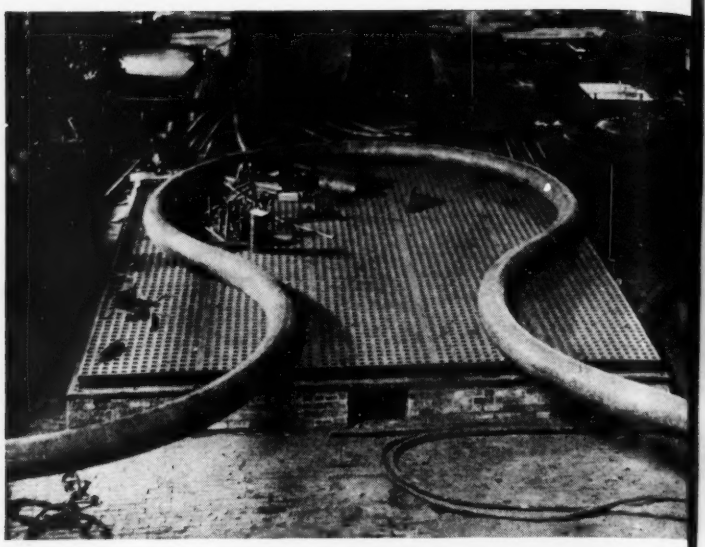
JOB oddities



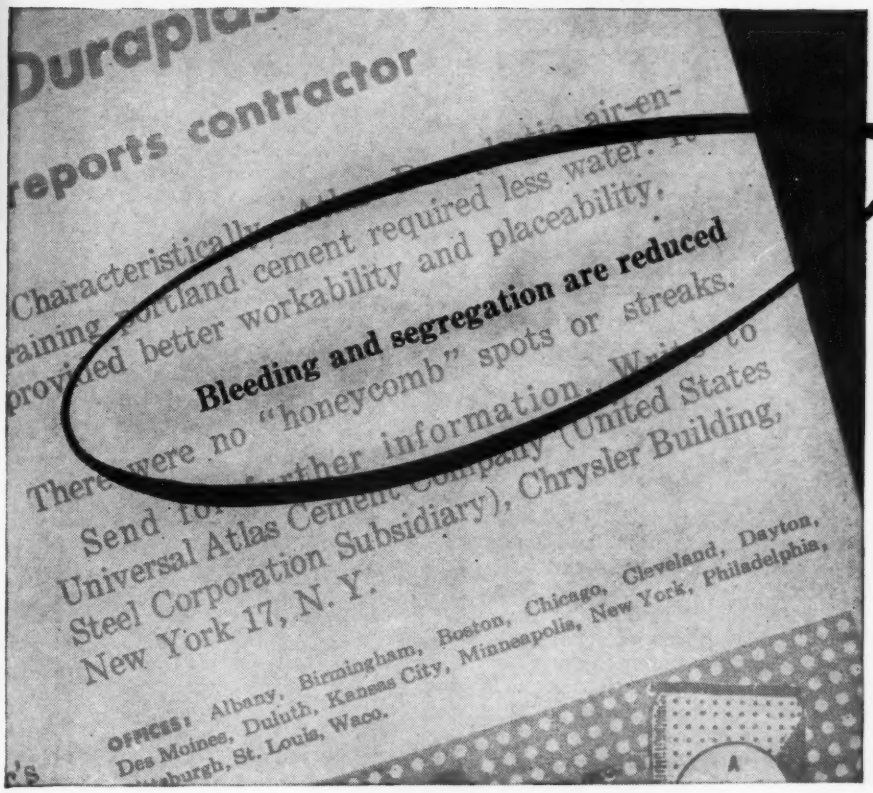
BIG BEND is produced when three 110-in. radius arcs are formed in Spang-Chalfont 12-in. carbon steel seamless pipe of 0.406 in. wall thickness in shops of Shaw-Kendall Engineering Co., Toledo, Ohio. After assembly for accuracy check, the bend was disassembled into three parts to facilitate shipment to University of Illinois at Champaign for installation as part of steam distribution line. Pipe fabricators report that 31-ft. 3½-in. high bend is largest ever produced in their shop.

← UNUSUAL SETTING for road grader is this bridge near Rio Vista, Calif. Delta Construction Co. uses Caterpillar diesel motor grader to scarify old 2-in. blacktop surfacing on wood floor of bridge.

IDAHO HOUSEWIFE (below), Mrs. Edith M. Storey, operates Lorain Moto-crane loading logs for her husband, G. B. Storey, at his logging operation near Boise, Idaho. In her spare time Mrs. Storey keeps house and looks after her six daughters.

DE LUXE ACCOMMODATIONS are provided for sidewalk superintendents (below) as Bucyrus-Erie dozer-shovel on International tractor excavates cellar so spectators can view operation from bar upstairs. As shovel lifts floor girder, sidewalk superintendents lift glasses in toast to success of excavation job in Conway, Pa.

The fact that...


reports contractor
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CONSTRUCTION EQUIPMENT NEWS

FEBRUARY 1948 REVIEW

of Construction Machinery and Materials

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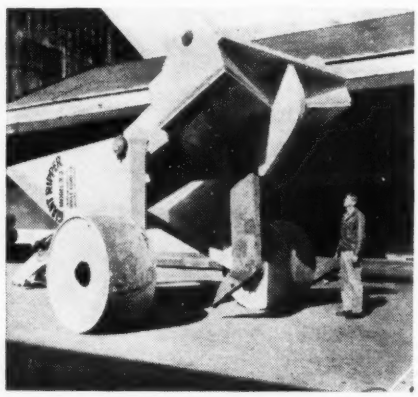
LUGGER CRANE—Mobile hydraulic unit to lift and carry up to 6,000 lb. Vertical boom travel of 10 ft. is provided, with corresponding cable

travel of 16 ft. Maximum clearance under hook is 18 ft. 6 in. All movements of crane controlled by one man from driver's seat through system of precision hydraulics. Half-track chassis is adapted to any kind of terrain and operates at speeds up to 40 mph.—**Day-Smith Hydraulic Crane Corp., Camp Hill, Pa.** *(192)*

HOIST-JACK—Complete in only three pieces (stand, hoist and handle), new combination hoist and jack has rated capacity of 2,000 lb., but weighs only 23 lb. complete. Ratchet-and-pawl construction of hoist uses smallest possible number of working parts. Safety-load handle is designed to bend at maximum overload before there is any possibility of chain breaking or of hooks straightening out. By mounting hoist unit on stand, sturdy jack is obtained. Hoist alone weighs 13 lb. Stand is 42 in. high.—**Coffing Hoist Co., Danville, Ill.** *(147)*

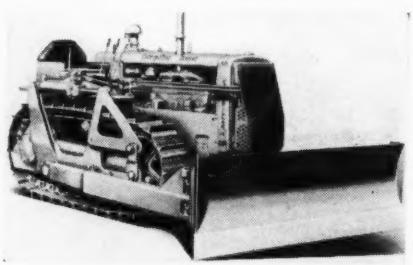
WIDENING FINISHER—Machine is of single-screed type with widths adjustable from 2 to 6 ft. by changing screed wings. Has automotive-type transmission with all parts running in oil and oversized ball-bearing clutch. One forward traction speed for normal work and one high reverse speed. Machine has two screed speeds to accommodate concrete of different textures.—**Blaw-Knox Co., Pittsburgh, Pa.** *(178)*

RIPPER — New 17-ton ripper is strong enough to take pull of three or four tractors, can penetrate 6 ft. of hard ground, and operates with one, two or three rooter shanks. Recommended for deep-penetration



ground breaking ahead of ditchers on pipeline or cable laying jobs. Overall width is 13 ft. 5 in., overall length 25 ft. 7 in.; rooter shank is 10 ft. 4½ in. x 18 in. x 5 in.—**Soule Equipment Co., 760 Ferry St., Oakland 7, Calif.** *(190)*

BULLDOZER—Angling type, hydraulically controlled, for exclusive use with diesel D4 track-type tractor. Provides either straight or angling type blades. Hydraulic piston has positive action. Balanced vane



pump and manually operated control valve with "raise," "lower," and "hold" positions. Available in 88-in. and 108-in. blades. Blade has 31 in. lift above ground. Maximum blade pitch adjustment is 25 deg. and maximum tilting adjustment is 6 in.—**Caterpillar Tractor Co., Peoria 8, Ill.** *(177)*

If you want more information on new products or publications, mark identifying number (given after address of firm) on the coupon below and mail. No cost or obligation to you.

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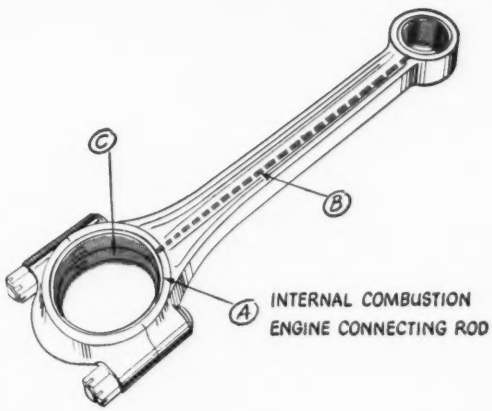
CASE 1018--PROLONGING BEARING LIFE IN HEAVY-DUTY ENGINES.



In toughest operating conditions, specially compounded RPM Heavy Duty Motor Oil maintains lubricating film on bearings. For both gasoline and Diesel engines. Comes in five grades: SAE 10 to SAE 50.

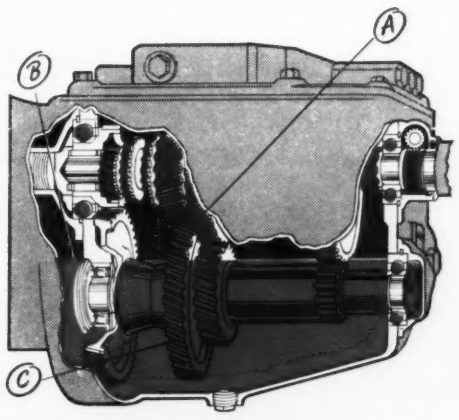
A. Contains anti-corrosion compound. Won't pit or honeycomb copper-lead, cadmium-silver or any other bearing metals.

B. Detergent keeps all oil passages and parts clean. Assures adequate supply of oil to all bearings, prevents ring-sticking and slow action of parts.

C. Adherence to metal surfaces, whether hot or cold, minimizes both running and starting wear. Film stays on idle parts and protects against rusting.

Other compounds in RPM Heavy Duty Motor Oil and natural qualities of selected base oils resist oxidation, formation of sludge and prevent foaming.

CASE 1029--REDUCING WEAR IN CONVENTIONAL AND WORM GEARS.



TYPICAL AUTOMOTIVE TRANSMISSION

Compounded RPM Gear Lubricant satisfactorily met all operating conditions in these gears in cars, trucks and similar machines. Comes in four grades: SAE 80, 90, 140 and 250. (For hypoids, use RPM Multi-Service Gear Lubricant.)

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Your judgment in picking people for positions of trust may be of the very best, but it has to be based mainly on past records of character and integrity. It can give you no guarantee against future developments which may induce the most trustworthy employee to succumb to the combination of temptation and opportunity and become an embezzler.

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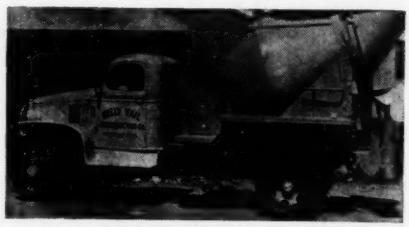
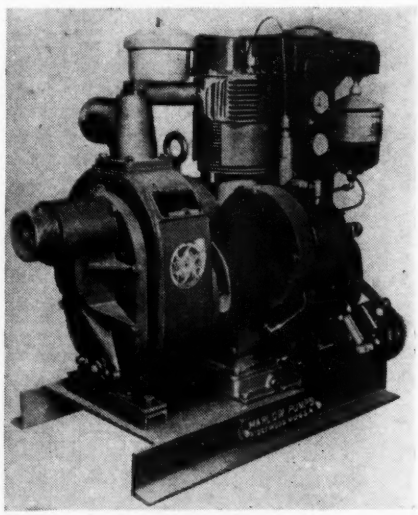
HIGH DISCHARGE TRUCK MIXER—Hi-Boy Trukmixer, high discharge type, is now in production by Blaw-Knox in addition to horizontal Lo-Boy model. Hi-Boy is made in standard sizes of 2, 3 and 4½ cu. yd.; corresponding capacities when used as agitator are 3, 4½ and 6⅛ cu. yd. Mixer reportedly discharges rapidly without segregation and will handle low slump concrete. Revolving hopper for both charging

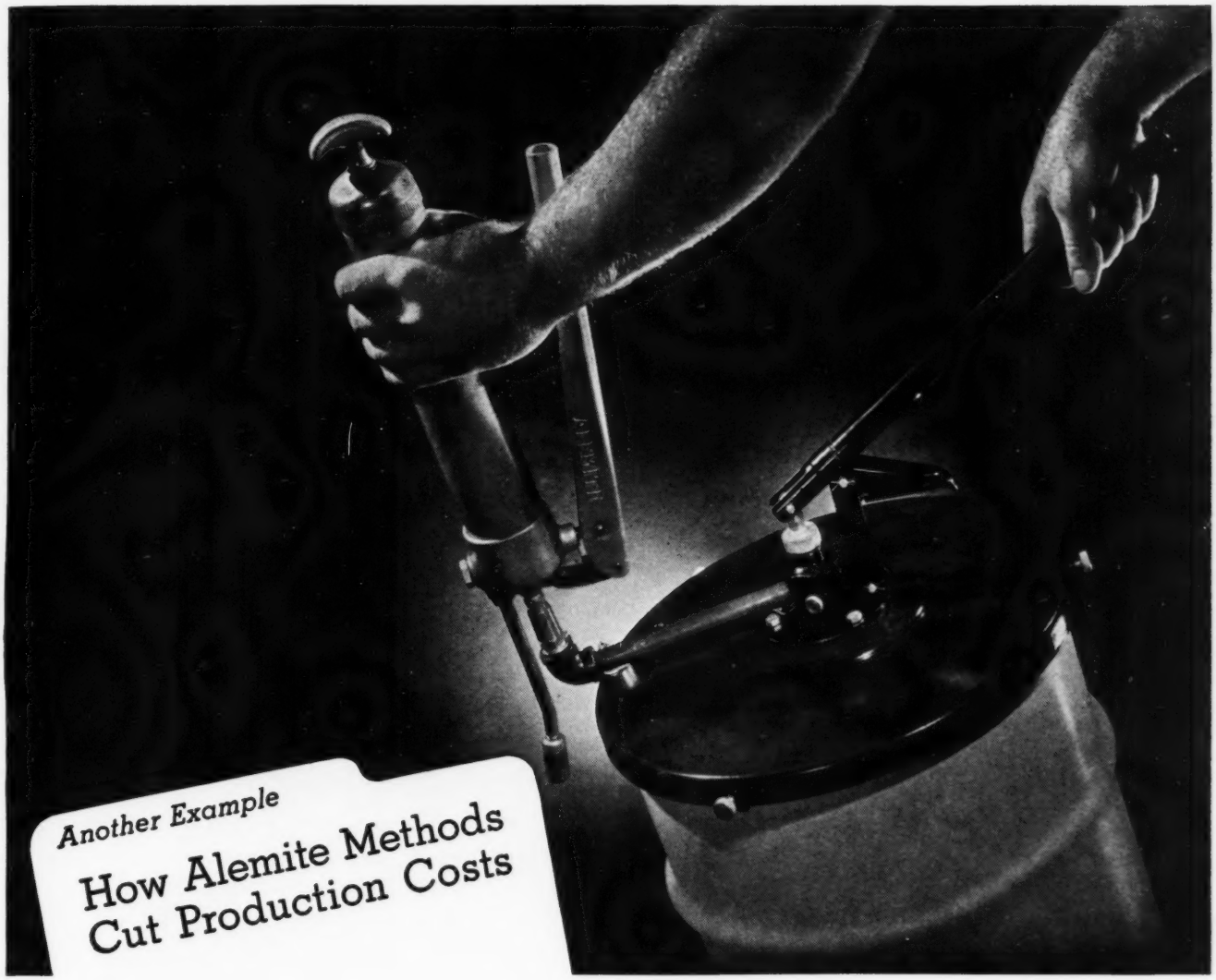


and discharging permits gadget-free and streamlined rear end. Hopper is supported directly from end of mixing drum cone and moves with drum as truck frame weaves under field operating conditions. Thus hopper remains in alignment with drum, which insures tight and enduring seal between hopper and drum, preventing leakage of grout and reducing maintenance and repair. Hopper has 32-in. unrestricted opening into drum for fast charging. It latches automatically in charging or discharge position.—**Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 22, Pa.** *(131)*

DIESEL POWERED PUMPING UNIT—This 220-gpm. self-priming centrifugal pump is powered by smallest diesel engine available—single-cylinder air-cooled Sheppard,



rated at 3½ continuous hp. at 1,800 rpm, and equipped with electric starting. One gallon of domestic fuel oil will pump 36,500 gal. of water.—**Marlow Pumps, Ridgewood, N. J.** *(143)*



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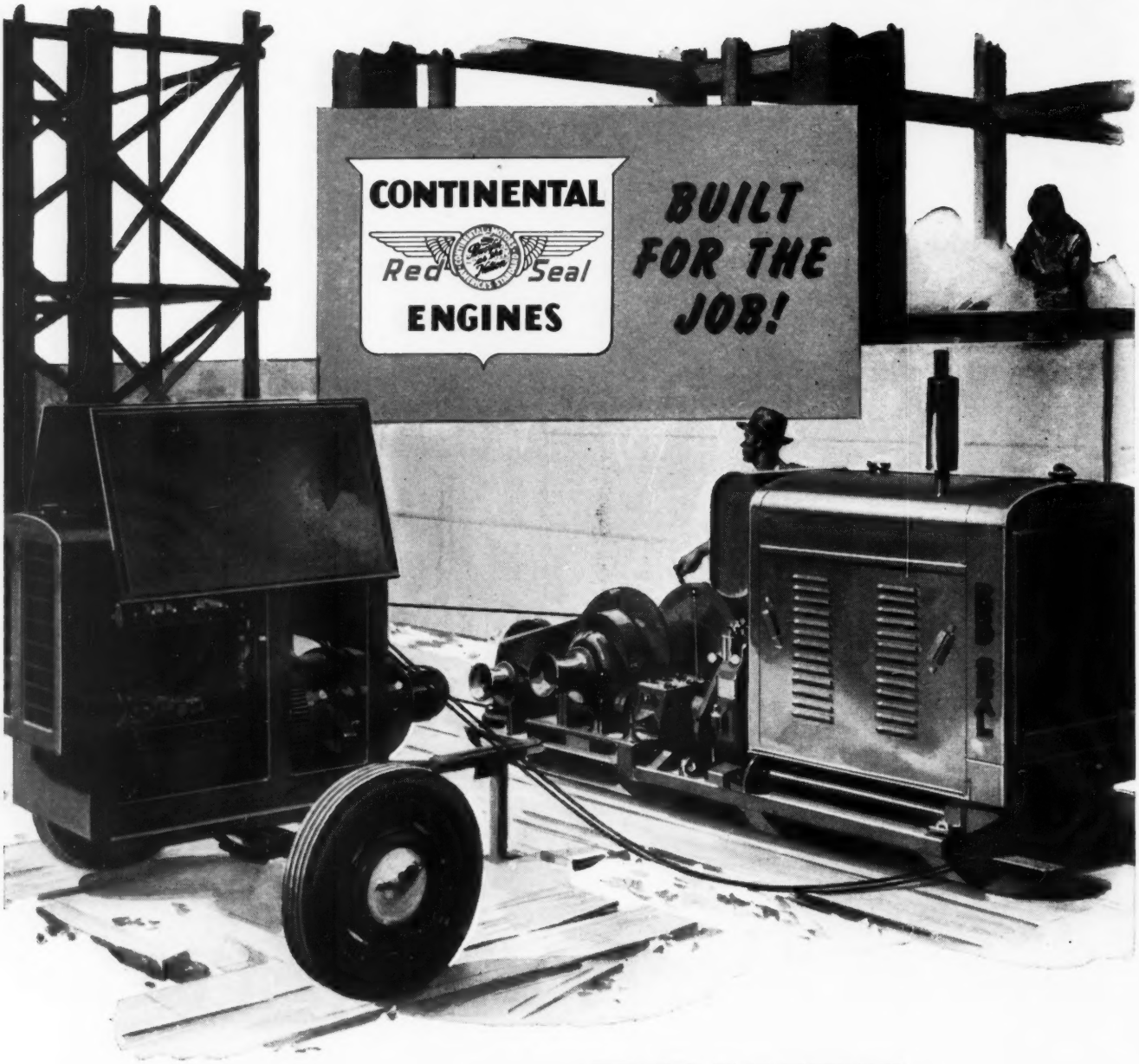

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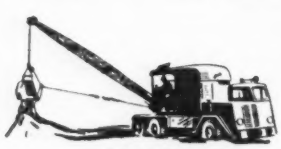
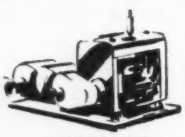


CRANES

PUMPS



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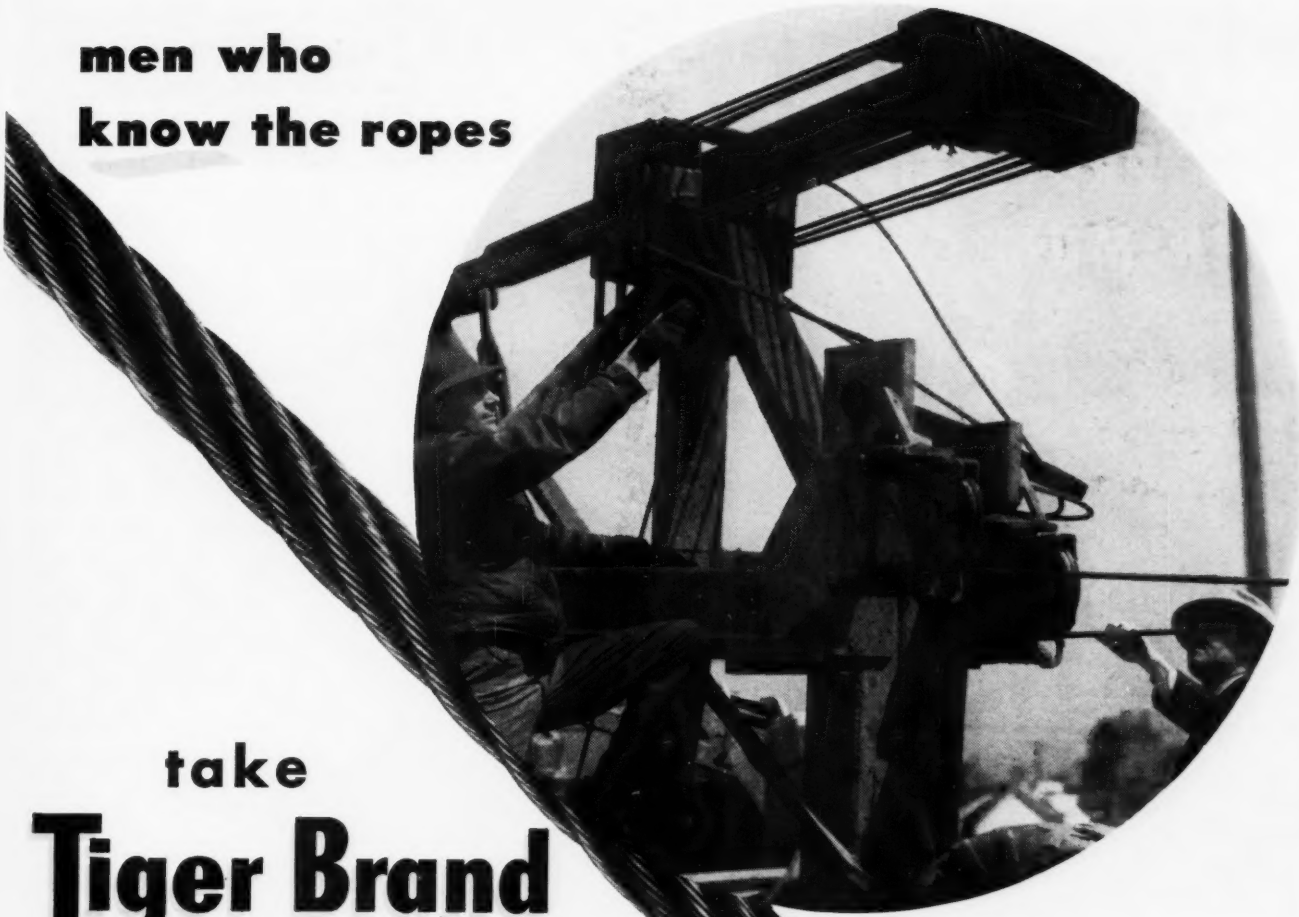

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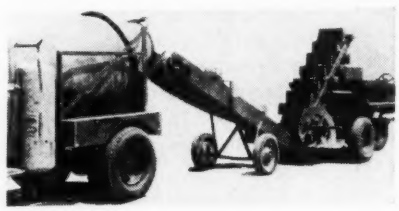
clutch and gears are completely inclosed and no belts or chains are used to transmit power from engine. Can be equipped with bucket or steel and wood platform or snow plow attachment. Bucket has capacity of 10 cu.ft. Unit weighs 400 lb., is 35 in. high, 63 in. long and 31½ in. wide. Turns in its own radius. Operates at speed comparable to fast walking pace.—**Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.** *(194)*

CONCRETE HANDLING EQUIPMENT—Three units for handling, mixing and pouring concrete are produced under name of Speed-King. Setup features mobile, self-loading weigh-batcher, which picks aggregate off ground with endless chain bucket elevator, weighing batch on three-beam boxed-in scale. Weigh-batcher has 2½-yd. capacity, weighs 5,880 lb., is driven by 4-cylinder, 40-hp. Ford tractor motor, and is mounted on truck wheels. For



loading mixer, wheel-mounted trailer slides under batcher at low end, receiving load on endless 20-in. rubber conveyor belt which unloads into mixer drum at high end. Operation is by 5-hp. aircooled gas engine or 2-hp. electric motor. Mixer, which fits on any 1½-ton short wheel base truck, operates on truck power take-off, via steel roller chain. It is regulated by rear outside throttle, as well as at driver's speed. Hatch, or gate has been eliminated because of blade design, which is said not to slosh out mix. Mixer weighs only 2,000 lb. and has 2½-yd. maximum capacity and one-man discharge chute.—**Willard Concrete & Mfg. Co., Lynwood, Calif.** *(153)*

All-Welded Vertical Lift Span Replaces Barge Bridge

By V. R. Gorham, Vice President
Cleary Bros. Construction Co.
West Palm Beach, Florida

THE old floating barge that carried highway traffic of State Route 71 across the Intracoastal Waterway at White City, Florida, has been replaced by a modern all-welded steel lift bridge constructed by our company.

The new bridge is designed for H-15 loading and is supported on concrete piles and piers. The overall length is 235′.

A total of 98 reinforced-concrete piles, 18″ square x 44′ long, were cast and driven to form the piers under the towers and the two end bents. Driving of pier piles was done from a barge with a Northwest crane fitted out with leads, using a No. 1 Vulcan Steam Hammer. For steel erection, the crane was fitted with a 95′ boom.

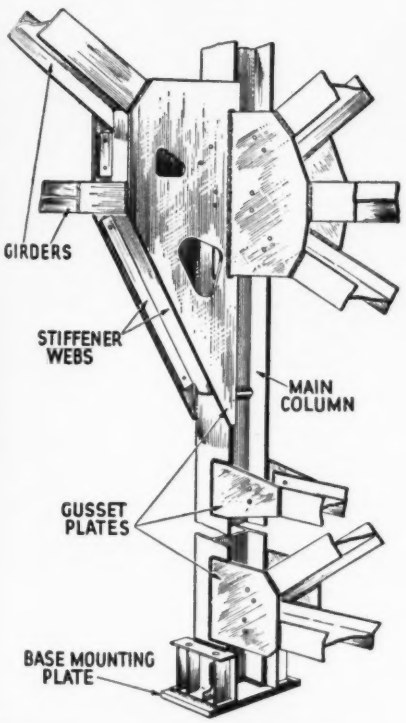


Fig. 1. Construction detail of main column at base foundation showing welded assembly of girders to column.

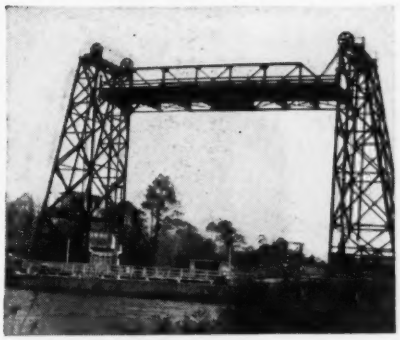


Fig. 2. Modern all-welded construction lift span bridge.

Pier forms were built of ¾″ sheeting with 2 x 6 studs on 16″ centers, and double 2 x 6 wales on 30″ centers for the average panels.

Steel for the towers and lift span was supplied by the Virginia Bridge Co. The two trusses for the 107′ lift span were already assembled when delivered, and the rest of the span welded together at the job site. Timber piles were driven in a nearby inlet, the span assembled and welded on this false-work, and then floated on two barges to its place in the bridge.

The trusses are 12′ 6″ high and are on 33′ 6″ centers. Near the bottom they are connected by 30″ 116-lb. I beams which are spaced 15′ apart and carry 14″ WF stringers. These stringers in turn support a 5″-thick concrete-filled steel deck grating.

The towers consist chiefly of 12″ WF 25 and 40-lb. beams. At the base each tower is 36′ 9″ wide x 28′ long. At the top the width is the same, but the slope on the back members cuts the length down to only 8′.

The weight of the lift span, including flooring and machinery, is 227,870 lbs. Theoretically the counterweights should have weighed half of this, or 113,935 lbs. each. Instead, the counterweights were made to weigh 109,940 lbs. each, with pockets for addition of balance blocks so the most efficient ratio could be worked out in actual tests.

"Fleetweld" electrodes and "Shield-Arc" welders, manufactured by The Lincoln Electric Company were used. The welders were of the engine-driven type with pneumatic tired running gear to provide easy portability.

The construction crew employed on the bridge averaged 23 men, consisting of a crane operator, 2 welders, 5 carpenters, 5 structural steel workers and 10 laborers. Had riveting been used, we would have required about 6 more men.

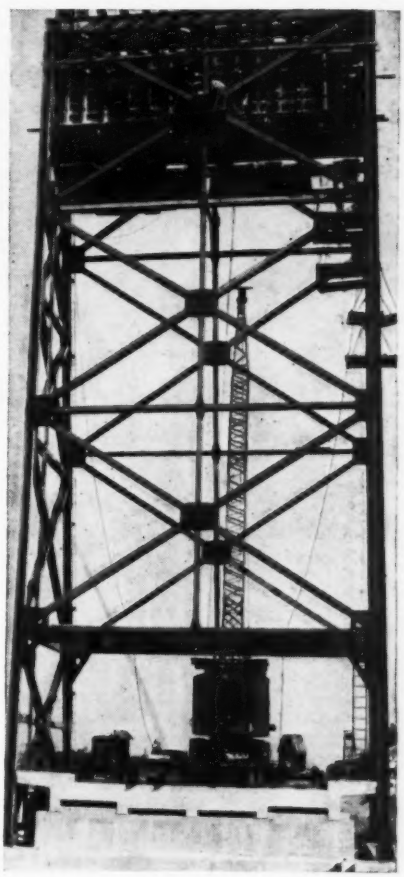


Fig. 3. All-welded steel tower assembled on concrete pier.

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The three illustrations to the right are typical combinations of VIBER's interchangeable units.

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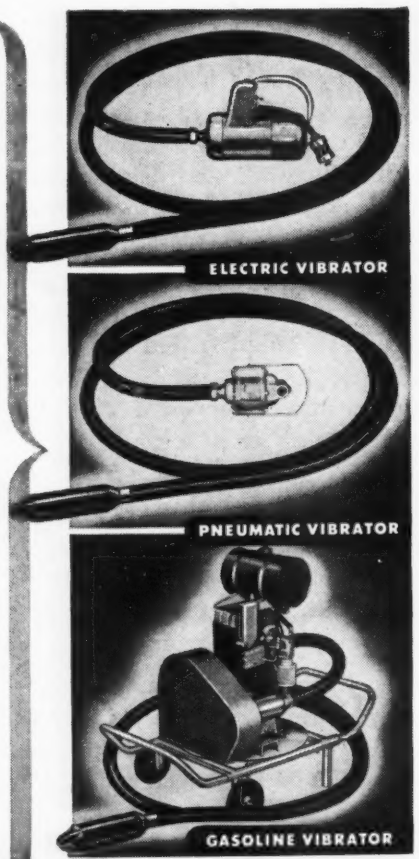

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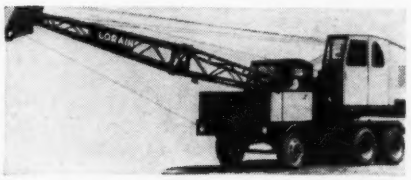
DUAL CONTROL FOR CRANES—Dual control can be installed on any Lorain Model TL-20 mounted on standard 4x4 or 6x6 rubber-tired Moto-Crane carrier which utilizes carrier engines and automotive propelling and Moto-Crane steering mechanism for traveling to job at



speeds up to 33 mph. Once at scene, machine can be converted into self-propelled unit within 5 min., with on-the-job travel (1 to 7 mph.) powered by turntable engine only. All steering and brake controls are located conveniently at operator's position in turntable cab. Steering is controlled by air power.—**Thew Shovel Co., Lorain, Ohio** *(156)*

ELECTRODE—New copper-nickel alloy electrode, Hobart Softcast A, is specially adapted to welding of cast iron where weld area must be machined, drilled or tapped anywhere in weld zone. It has miner flux coating for metallic arc welding. Weld deposits are non-ferrous, light gray in color, malleable, easily machinable and with tensile strength equal to good cast iron. Available in 3/32, ⅛, 5/32 and 3/16-in. dia. in 18-in. lengths, center brushed for a.c. or d.c.—**Hobart Bros. Co., Hobart Square, Troy, N. Y.** *(169)*

BRIDGE JACK—Improved Simplex bridge jack and bolt puller for lining, shimming and replacing timber decks on railroad bridges has been introduced. Bolt puller attachment on end of chain easily handles bolts with heads sized ½ to ⅞ in. Jack is held from tipping by ⅜-in. chain. Designated as No. 310, jack operates vertically, horizontally and at any angle when base locking pawl is released. It is available with base either 3¾ or 5 in. wide. It is complete with lever and 5 ft. of ½ BBB chain with grab hook and bolt puller attachment. Specifications for jack are: Capacity 15 tons; height 24½ in.; lift 13 in.; toe lift minimum 2¼ in; weight 66 lb.; weight complete 98 lb. —**Templeton, Kenly & Co., 1020 S. Central Ave., Chicago 44, Ill.** *(152)*

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F-7 BIG JOB 19,000 LBS. G.V.W.
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★ ***NEW*** heavy duty Quadrax rear axles. Hypoid-type in F-7, two-speed-type in F-8.

★ ***NEW*** Feather-Foot vacuum-actuated truck brakes. 16-in. by 5-in. double cylinder rear brakes in F-8, 16¼-in. by 3½-in. double action rear brakes in F-7.

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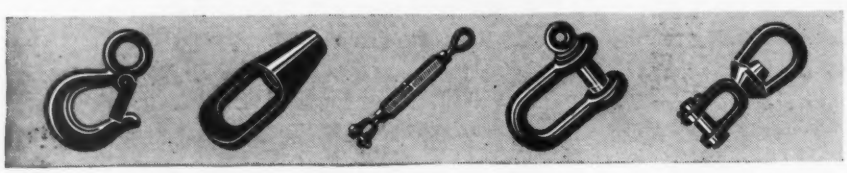

(For more information on new products, use coupon, p. 116.)

MOTOR TRUCKS—New line of "job rated" trucks includes 248 basic chassis models ranging from 4,250 to 23,000 lb. gross vehicle weight and up to 40,000 lb. gross train weight. Front axles have been moved back and engines have been moved forward to place more of gross vehicle weight on front axle and provide better weight distribution. Wheelbases have been reduced from 6 to 8 in., but cab-to-axle dimensions remain practically unchanged. Cross steering permits a 37-deg. turning angle both right and left. Road shock through steering wheel is reduced by cross-steering which has drag link running parallel with front axle. Seat width has been increased to 57¼ in. to permit three large men to ride without crowding. Seat cushion utilizes air in combination with coil springs to provide comfort. Comfort is provided by all-weather heating and ventilating system. Cabs have "360-deg. vision" through increased glass area. Seven different improved engines handle power requirements of the new line of trucks. Braking systems are larger and improved. Front and rear axles have increased load-carrying capacity. Radiator cores have been redesigned to facilitate better cooling. Improvements have been made in frame construction.—**Dodge Division, Chrysler Corp., Detroit 31, Mich.** *(193)*

SINGLE-PHASE INDUCTION MOTOR—Capacitor-start, squirrel-cage motor has high-torque valves all the way up from standstill to full speeds. It is electrically reversible and characteristics are fixed, not subject to change by brush shift. Centrifugal switch is used on motors rated 1 to 3 hp. at 1750 rpm. and 1½ to 5 hp. at 3600 rpm. On larger ratings or special mountings, newly developed relay is used. Switch consists of rotating governor on shaft which actuates set of contacts in one of end brackets. Relay is multiple unit, specially developed to provide protection against undesirable dynamic braking when motor is de-energized.—**Westinghouse Electric Corp., 306 Fourth Ave., Box 1017, Pittsburgh 30, Pa.** *(160)*

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A big dragline with a reputation for delivering the yardage. That's the Lorain-820! The turntable features the Hydraulic Coupling power take-off which absorbs shock and impact; makes for smooth, vibrationless operation and eliminates engine stalling. Perfect footing is assured by the 15′ 6″ long, 2-speed, chain drive crawler equipped with 34″ wide, drop forged, swamp-type treads.

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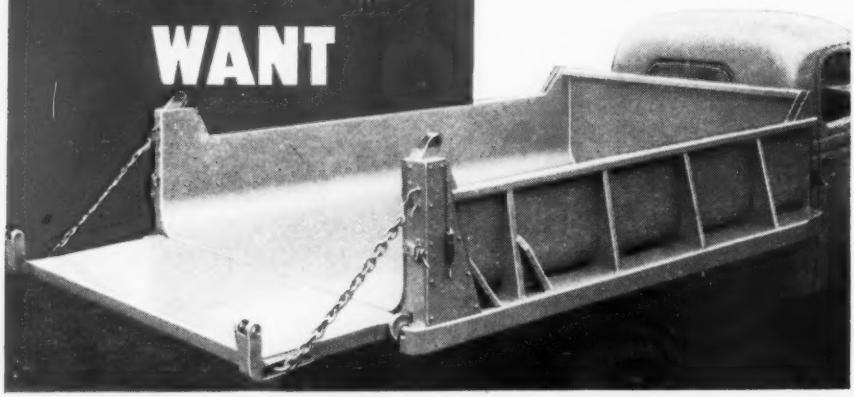

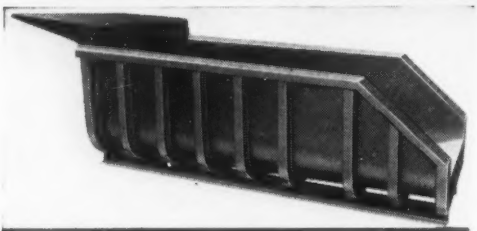

PERFECTION has the engineers, personnel, and modern production facilities to produce one or ten thousand Bodies or Body and Hydraulic Hoist units to your complete satisfaction. For any make or model of truck. Let us figure on your requirements.

SPECIAL PURPOSE BODIES

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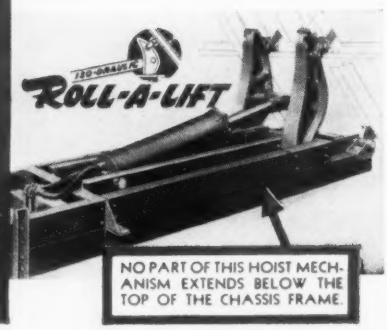

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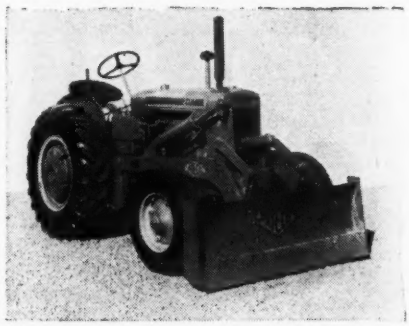
STAKE and DUMP BODIES
HYDRAULIC HOISTS

FOR ANY TRUCK
STANDARD or SPECIAL UNITS
IN ALL SIZES : FOR ANY USE

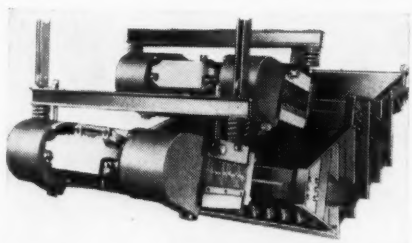
BULLDOZERS — Three heavy-duty bulldozers, especially designed for Case industrial wheel tractors, cut the full width of tractor. Bowl design is rigid, internally-ribbed, welded box. Bulldozer is securely fastened at transmission case, draw-



bar pad and rear axle housing. Bowl and push members are built to take full drawbar power of Case tractor in roughest kind of work. Blade is powered both up and down by front-mounted hydraulic pump which assures constant power without gear shifting.—**American Tractor Equipment Corp., 9131 San Leandro Blvd., Oakland 3, Calif.** *(183)*

PORTABLE WELDER—P&H Model WN-200 is now available with extra power supply. Offered as optional equipment, unit provides 1½ kw. of alternating current at 115 v., single phase. This enables electric lights to be hooked up for floodlighting during welding, as well as permitting use of electric powered tools. Any universal ac.-dc. portable tool can be operated from this unit. Welder is N.E.M.A. rated machine of 200 amp., with welding service range of 30 to 260 amp.—**Harnischfeger Corp., 4400 W. National Ave., Milwaukee 14, Wis.** *(149)*

VIBRATORY GRIZZLY FEEDER—Designed for large capacity separation of crusher feeds, heavy-duty electric vibratory grizzly is equipped with double magnet. Variable con-



trol of rate of feed. Operation is from 220 to 440 volt ac. Small models operate from 110 volt ac.—**Syntron Co., 500 Lexington, Homer, Pa.** *(176)*

Thermoid Air Hose
Tailored for the Job!

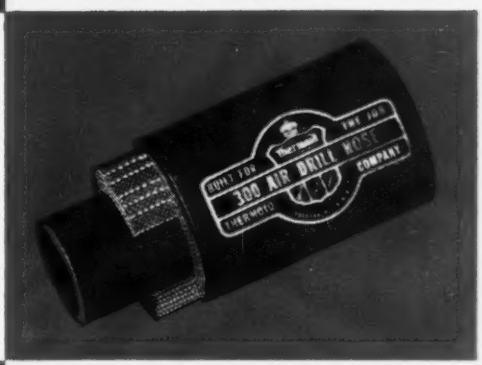
Three popular types from Thermoid's complete Air Hose Line

For heavy duty service where oil may be present in the air line, and cover abrasion is severe.

Thermoid # 210 Type—Special Neoprene Oil-Resisting Inner Tube reinforced with tough plies of braided yarn, abrasion resisting cover—pressures up to 300 P.S.I. furnished in lengths of approximately 500 ft. in sizes ¼ to 1" and approximately 250 ft. in 1¼ and 1½".

Wrapped construction—for similar heavy duty service where hose is subject to rough handling.

Thermoid # 300 Type—Neoprene Tube reinforced with heavy, square woven duck, abrasion resisting cover—pressures up to 300 P.S.I. Sizes ½ to 3" in 50 ft. lengths.



For light duty air connections, blow-out work and similar service.

Thermoid # 220 Type—High quality Inner Tube compounded to resist oil, tough cover. Furnished in lengths of approximately 500 ft. in sizes ¼ to 1" and approximately 250 ft. in 1¼ and 1½".

Additional types of Air Hose are available for specific services

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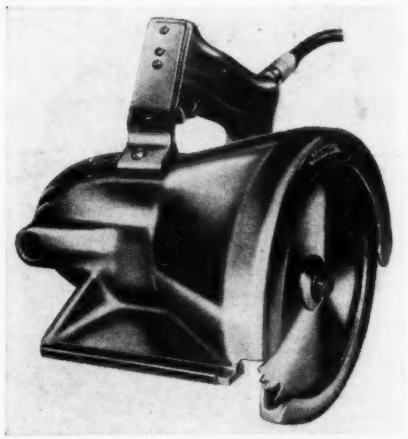
ELECTRIC HAND SAWS—Model 160 saw is equipped with 6-in. dia. blade, cuts to maximum depth of 2 1/32 in., and weighs 10½ lb. No-load speed is 4,000 rpm. Model 180 saw has 8-in. dia. blade and is equipped with adjustable shoe for



setting blade to any angle from 0 to 45 deg. and adjusting depth of cut from 1 in. to 2 5/16 in. maximum straight cut. Maximum depth of cut at 45 deg. is 2¼ in. No-load speed is 3800 rpm. Net weight is 15¾ lb. Motor in both models is universal 110 v. ac-dc type.—**Bradford Machine Tool Co., Cincinnati, Ohio.** *(145)*

"ARMSTRONG BROS." Pipe Dies and Chasers are machined from special alloy steel, are heat treated and oil tempered. Cutting teeth are "backed-off" with ground points—cut faster, cut easier, cut smooth tight-fitting threads. They come in "solid", "Adjustable" and "Receding" types to fit all standard make stocks and threaders. Standardize on "ARMSTRONG BROS." Dies and Chasers for better thread cutting.

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Hystaway is made for "Caterpillar" D8, D7 and D6 tractors—new or old. Hundreds of Hystaways are in use on all kinds of construction jobs, all over the world, cutting production costs, speeding work schedules, earning dividends for their owners. Your "Caterpillar" distributor can arrange a demonstration.

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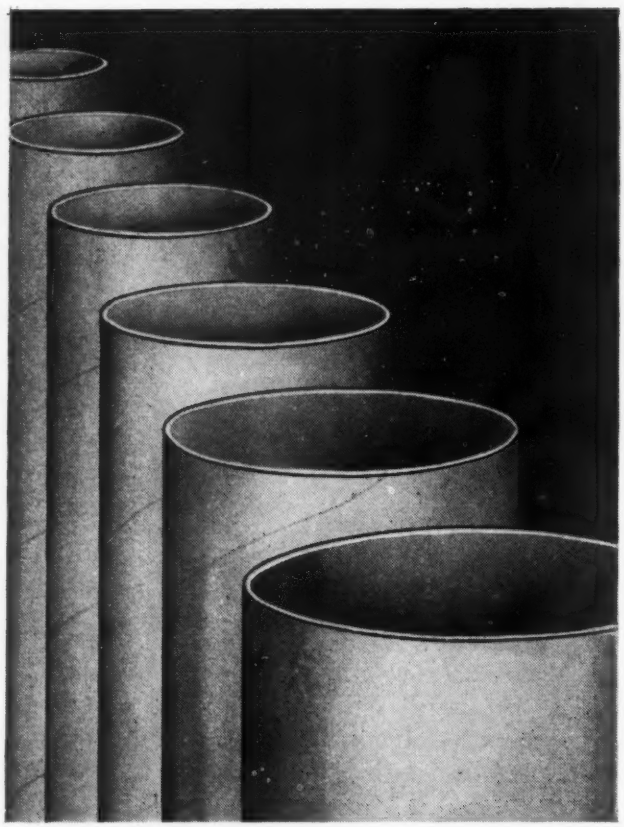

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SNAP-ON TOOLS—Completely redesigned ⅜ in. drive line of sockets and handles known as the Snap-on Ferret set. Handle fits user's hand. Four sockets added to give set size coverage between ¼ and ⅞ in.—**Snap-on Tools Corp., Kenosha, Wis.** *(187)*

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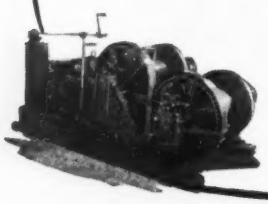

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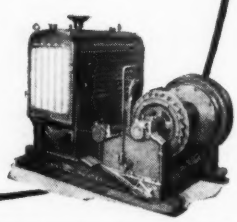

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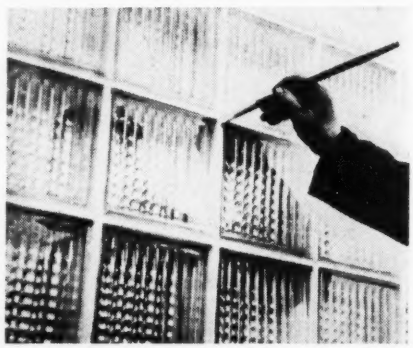
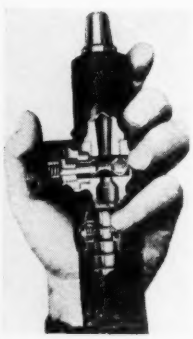
MORTAR SEALANT FOR GLASS BLOCK—New product known as Klee sealant coats exterior mortar joints, adheres to mortar and forms a tight flexible bond. Of plastic-



like consistency, it can be applied with calking gun, or thinned with solvents for brushing consistency. Available in white and other colors. —**American Fluresit Co., 635 Rockdale Ave., Cincinnati, Ohio.** *(191)*



PALM-SIZE HOSE-VALVE—Only two moving parts, operating plunger and control ball; no springs. Hose nozzle is discharged by push button which causes plunger to roll ball off its seat, producing full flow of water at 50 psi. hose pressure. When push button is released difference in pressure between center and outside of water stream forces ball into valve throat, closing valve and raising plunger. Ball is held against seat by line pressure. Available for standard hose sizes from ¼ to 1 in., delivering up to 13 gal. per min. at 75-lb. line pressure. Made of Monel metal.—**Paul Valve Corp., 157 East 128th St., New York 35, N. Y.**

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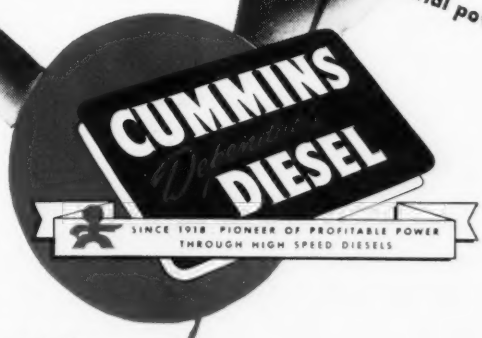

Name your job . . . any job requiring single engines up to 275 hp . . . "multiples" up to 1440 hp . . . and there is a Cummins Diesel designed to perform that job dependably and economically.

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Ten years of field test has proven that our power-feed design of direct, transmission and worm gearing with two-speed control will not only cut shot hole drilling time in half but also eliminates costly maintenance delays. V-belt drive to the power-feed with an additional ample clutch in that assembly gives absolute control of a drilling speed of two to three feet per minute with a retrieving speed of twenty-four feet per minute.

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HIGH TIERING TRUCK—New type lift upright for fork truck. Complete range of lift height varies from low-lift standard of 72 in. to high-lift standard of 132 in. Clipper line of

fork truck has lift capacity of 2,000 lb. and is produced in both gas powered and electric battery powered models.—**Clark Equipment Co., Tructractor Division, Battle Creek, Mich.** *(195)*

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OSGOOD Air Control means faster, safer operation . . . more work done in less time, with less effort. Plan now to choose an OSGOOD. A complete line of power shovels, draglines, cranes, clamshells, backhoes and pile drivers . . . a model for every type of work.

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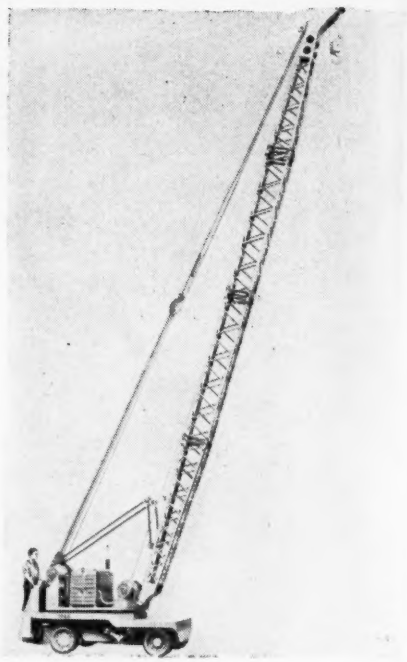
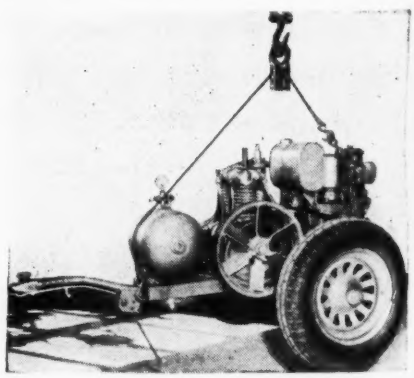
CRANE TRUCK—New crane-truck with full 40-ft. reach, designed for construction and maintenance of high buildings. Equipment is also said to be valuable in handling material into and out of excavations; loading and unloading ships and rail cars; maintenance and construction of railways, and odd hoisting and



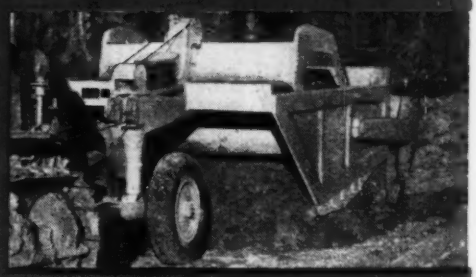
transportation jobs. The 40-ft. boom is constructed in 10-ft. sections, with center sections removable to provide 20- and 30-ft. booms when longer lengths are not needed. Capacities of boom at full length are: 4,500 lb. at 7-ft. outreach; 3,620 lb. at 9-ft. and 2,000 lb. at 19-ft. The boom has a capacity of 10,000 lb. at its shortest length.—**Yale & Towne Mfg. Co., Philadelphia Division.** *(180)*

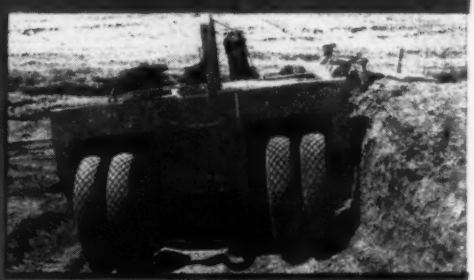
EQUALIZING SLINGS—Level-load lifting sling automatically adjusts length of legs hooked to load, according to weight distribution. Simple sturdy construction eliminates

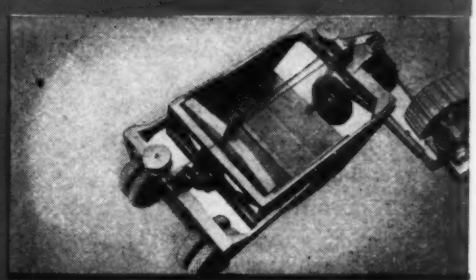


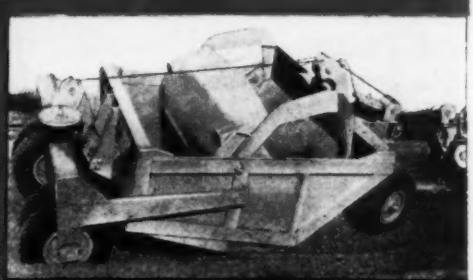
mechanical operating difficulties and possibility of breakage. Safety factor of five, and load ratio of 2 to 1 are ample to give maximum safety in preventing tipping or slippage.—**The Caldwell Co., 1830 Camp Ave., Rockford, Ill.** *(182)*

SOUTHWEST *again resumes the exclusive production of* TYPE "S" 4-WHEEL SCRAPERS









THESE SOUTHWEST 4-WHEEL SCRAPERS are unequalled for economy and efficiency in fast, low-cost dirt moving. Check these outstanding features ● FASTER, EASIER LOADING—The "rear lift" method of control permits the bowl to lay flat when digging. The earth is "rolled into" the bowl instead of being forced "uphill". ● POSITIVE, ROLLING EJECTION WITH LESS POWER—assures accurate control of spreading depth from a thin layer to a single heap. ● CUTS CLOSE TO BACKSLOPES, BUILDINGS AND RETAINING WALLS—Cutting edge extends almost the entire width of the frame, permitting close, accurate cuts. ● SHORT TURNING RADIUS AT FAST SPEEDS—Even load distribution, low center of gravity and balanced weight provide extreme stability. ● FINISHES SIDE SLOPES EASILY AND SAFELY—There is no top-heavy superstructure to overbalance this scraper. It rides the slope as smoothly as on the level.

FOR DETAILED SPECIFICATIONS WRITE FOR BULLETIN CM-21

For the past eight years these scrapers have been manufactured and distributed under license from Southwest. From now on Type "S" 4-Wheel Scrapers will be manufactured and distributed under our own trade name, "SOUTHWEST". Hundreds of these scrapers are in use throughout the world—their reputation for efficient, dependable performance is well known.

CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

ALHAMBRA, CALIFORNIA

MAKE A BUSINESS TRIP BY AIR FREE!

We'd like to make this offer to every executive in the building industry. The next time you want to make a business trip, will you let us fly you there in the 1948 *Ryan Navion*—absolutely FREE?

No, we're not crazy. We just think that an actual business trip is the best way to prove the amazing speed, comfort, and convenience of the all-metal, 4-place *Ryan Navion*. In this way, without taking a minute of your time from your business, we can best demonstrate the many advantages this practical plane can give you and your company, business, or profession.

All we ask in return is a few minutes during the flight to explain to you how the 150 mph *Navion* costs no more than a car to drive, and how businessmen everywhere are finding that this rugged, safe, easy-to-fly plane is a money-maker for them.

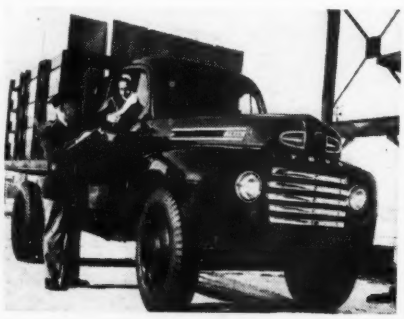
You are, of course, under no obligation to us. If you're interested in either a business trip or an airport demonstration, drop us a note on your business letterhead, and we'll have our nearest dealer get in touch with you.

NEW Navion By RYAN

RYAN AERONAUTICAL COMPANY
2102 Lindbergh Field, San Diego 12, Calif.

(For more information on new products, use coupon, p. 116.)

MOTOR TRUCKS — New line of trucks, largest ever manufactured by Ford. Two new series (F7 and F8) include maximum gross vehicle weights of 19,000 and 21,500 lb. Another new series is 6-cylinder cab-over-engine model. Three new power plants—95-hp. 6-cylinder engine, 100-hp. V-8 and 145-hp. V-8. Radiator grille and headlights are recessed for protection. Greater front end strength through improved sheet-metal suspension and heavier construction. Fenders heavier, wider, and of new design to provide greater tire clearance. Heavy channel-steel front bumper. Driver comfort provided by 7-in. greater width and more headroom. Weatherproofing has been improved and one-piece windshield provides increased visibility. Complete line of 1948 trucks includes ½-, ¾-, 1-, and 1½-ton ratings. Also extra heavy duty 2½- and 3-ton bus chassis. Three new power plants are available for Ford



1948 trucks: 6-cylinder, 95 hp. truck engine; V-8 100 hp. engine; and heavy-duty V-8 engine developing 145 hp. for largest trucks ever built by Ford. All engines have heavy-duty oil bath air cleaners, pressure-sealed cooling systems and a new weather-proofed ignition system with automatic spark control regulated by engine load and speed. Feature of new 6-cylinder engine is aluminum alloy pistons which are longer and plated to resist wear. They have four rings above the wrist pin for maximum oil economy and minimum friction losses. Compression ratio, 6.8 to 1, produces more power. New high-lift cam shaft opens valves wider and faster, resulting in more efficient intake and exhaust. The 100-hp. engine has accessories conveniently grouped on top for easy servicing as well as many other new features. Features of 145-hp. plant include hydraulic valve lifters which automatically compensate for valve wear and insure quiet operation. The larger trucks have five-speed transmissions. The 2-ton and heavier models are equipped with vacuum power brakes. **—Ford Motor Co., Dearborn, Mich.** *(175)*

WHY "Aero-Seal"

T.M. Reg. U.S. Pat. Off.

WORM DRIVE

HOSE CLAMPS

WILL SAVE YOU MONEY

RUGGED!

Sturdily built. Stainless steel or carbon spring steel. Rust resistant. Mechanically interlocked saddle. Worm gear drive. No loose parts. Vibration-proof. Unaffected by high or low temperatures and pressures. Uniform "squeeze" on hose. Greater band strength.

FASTER TO INSTALL!

Save time. Easily installed. No need to remove hose. Self-locking. Will not collapse thin wall hose.

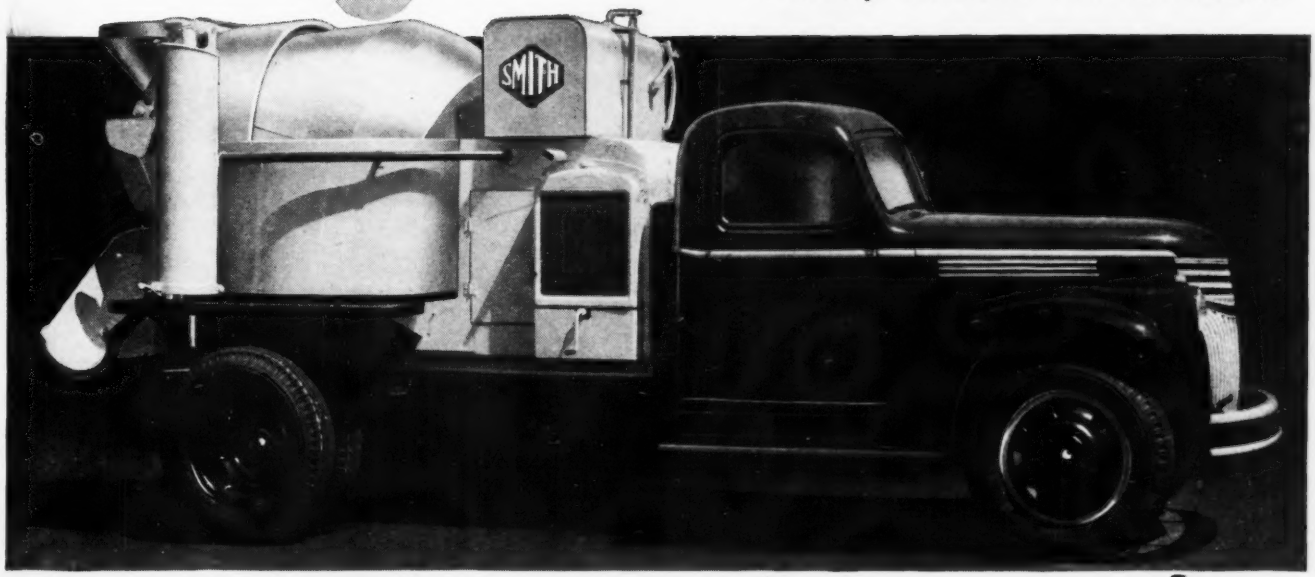
REDUCE MAINTENANCE COSTS!

They "stay put". Leak-proof. Extra long take-up. Reduce inventory requirements. Keep equipment on the job. Use them for all air, fuel and coolant lines on trucks, tractors, pumps, mixers, compressors, power shovels, motor graders, etc. Write for FREE SAMPLE. You'll like "Aero-Seal".

BREEZE CORPORATIONS, INC.
Aircraft Standard Parts Co. Div.
41 South Sixth Street
Newark 7 • New Jersey

Where Else can you find a Truck Mixer with so many Profit Making FEATURES

- Dual Water Injection System
- Cold Weather Protection for Water System
- No Water Bell or Nozzle Inside Drum
- Gravity Flow Feed Chute Charging
- No Leaky Loading Hatches
- Real Visible Mixing
- Larger Drum — Increased Capacity
- Lower Weight — Bigger Pay Loads
- High Discharge Directly into Forms
- Controlled Slow or Fast Discharge
- Perfected Drum Closing Door and Seal
- Famous Smith "End-to-End" Mixing Action
- Direct Connected Motor with 3-Point Suspension
- Improved Transmission Cushioned in Rubber
- Beauty Combined with Performance



YES—DELIVERIES ARE BEING STEPPED UP!

Smith-Mobile Truck Mixers and Agitators are available in four popular sizes. Naturally the demand for these improved models is still greater than the supply. But deliveries are being stepped up by greatly increased production. Before you buy new truck mixer equipment, be sure to investigate Smith-Mobile's many profit-making features.

THE T. L. SMITH COMPANY
2851 N. 32ND STREET, MILWAUKEE 10, WISCONSIN

Get the Facts!

A new Smith-Mobile bulletin is now available. It gives you complete description, dimensions and specifications of the improved Smith-Mobile models. If you haven't already received a copy of this new bulletin—write for one.

SMITH MOBILE

The Original High Discharge Truck Mixer and Agitator

HOW TO DIG A DITCH— AND NOT GO IN THE HOLE

Yager and Sons, Beaverton, Michigan, call the 3-cylinder GM Series 71 Diesel that powers this shovel "just about the best power we've ever used." Inset shows Mr. Fay Yager, in charge of the shovel operation, who says, "You fellows just don't boast enough about that GM Diesel engine."

Shown here is a General Motors Diesel-powered Bay City ¾ yard shovel. It's doing the toughest part of a pipe-trench job—mile after mile of 6′ by 12′ trench—cutting through wet sand, swamp mud, pulling stumps, digging in the roughest kind of terrain.

Taking jobs like this in stride is everyday work for GM Diesel-powered equipment. The 2-cycle GM Diesel gives instant response to widely fluctuating power demands, operates on low-cost fuel, and delivers long, economical service.

No wonder so many operators rely on GM Diesel power to help them trim costs on close-figured contracts. You, too, will find it pays to specify GM Diesels for repowering old equipment or when buying new. Write today for complete details.

DETROIT DIESEL ENGINE DIVISION

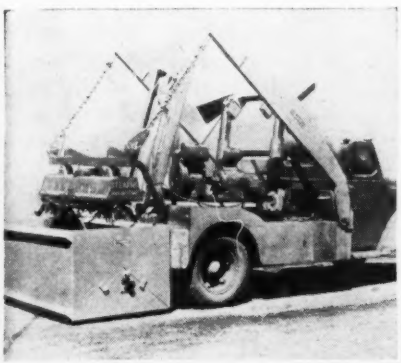
DETROIT 28, MICH. ● { SINGLE ENGINES . . Up to 200 H. P. / MULTIPLE UNITS . . Up to 800 H. P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

ROAD SWEEPING MAGNET—Stearns 18x96-in. magnet is combined with Dempster-Dumpster body to pick up and carry scrap metal from road surfaces. Magnet is detachable by removing two pins and chains. Height of magnet above ground is adjusted by raising or lowering boom



of unit. Gasoline-engine-powered generator supplies electrical energy to magnet. Accompanying illustration shows magnet ready to dump scrap metal into body receptacle.—**Stearns Magnetic Mfg. Co., 635 South 28th St., Milwaukee 4, Wis.** *(200)*

JOINT SEAL MELTER—Designed for use with Sealz, rubber compound that permanently seals joints in concrete, Sealz-Melter is of double boiler type, one chamber inside other. Oil heated to 450 deg. F. and automatically controlled at that temperature circulates in outer chamber. This principle prevents overheating

and damaging compound, which is loaded into inner chamber. It holds three 50-lb. bags of material. Heat is supplied by burning gas from pressure cylinders. Melted Sealz is withdrawn through fully insulated valve seated in oil bath chamber. Melter weighs 1150 lb. and is 3½ ft. high, 3 ft. 7 in. long and 27 in. wide. —**U. S. Rubber Co., Rockefeller Center, New York, N. Y.** *(164)*

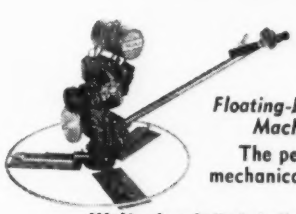
PUT A *Whiteman* *Power Buggy* ON THE JOB...

The Motorized Wheelbarrow of a Thousand Uses

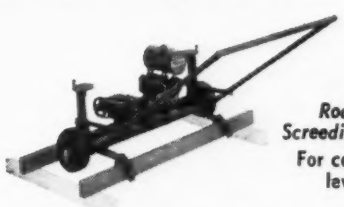
Hauls wet concrete, dirt, sand, bricks, tools . . . anything you can load in or on it. Ideal for pouring and upper story work. Goes through doorways. Weighs 750 lbs. . . . width 28" (or 36" with dual wheels). Bucket ht. 34". Speed: 2 to 15 m.p.h. forward or reverse. Soon pays for itself. Also available with flat stake body.

- Capacity: 2,000 lbs. or 12 cu. ft.
- 6 H.P. does the work of 6 men
- Turns in own radius . . . reverses
- Controlled dumping from driver's seat

Plus these time-tested running mates:



Floating-Finishing Machine
The perfect mechanical trowel



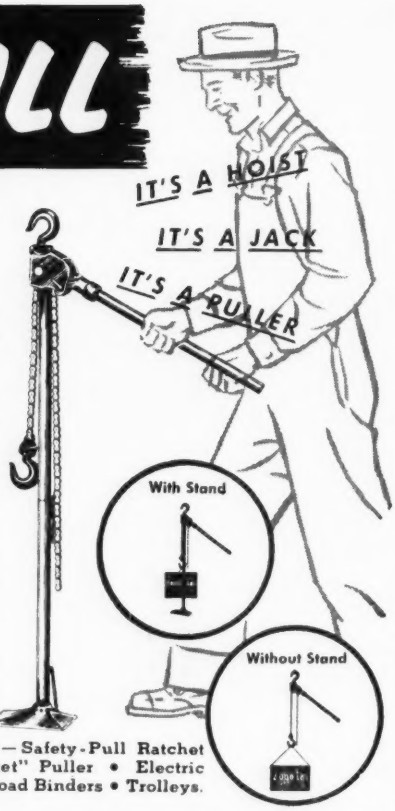
Rodding (or Screeding) Machine
For compact and level slabs

Write for full details of cost-saving Whiteman Concrete Equipment

Whiteman CONCRETE EQUIPMENT
WHITEMAN MFG. CO.
3249 Casitas Ave., Los Angeles 26, California

LIFT or PULL

Easier and Faster—
with the Amazing New
COFFING HOIST-JACK



A versatile 3-in-1 tool, this new Coffing Hoist-Jack provides greater efficiency and ease of operation on scores of lifting, pulling or stretching jobs. Simplified ratchet design and sturdy construction assure safety and long life. Weighs only 23 pounds, yet lifts a 2000 pound load. Operates with stand as a jack, or without stand as a hoist or binder; quickly set up, easily portable. Tested to 100% over rated capacity. Write for Bulletin D-1.

"SAFETY-PULL" HOISTS
Ratchet Lever type; Capacities from ¾ to 15 tons

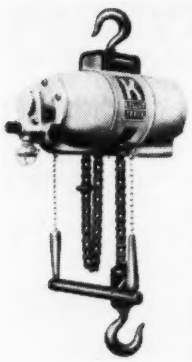
OTHER COFFING PRODUCTS—Safety-Pull Ratchet Lever Hoists • "Mighty-Midget" Puller • Electric Hoists • Spur-Geared Hoists • Load Binders • Trolleys.

COFFING HOIST COMPANY
DANVILLE, ILLINOIS

ETNYRE
"Black-Topper"
BITUMINOUS DISTRIBUTORS

ACCURATE . . . DEPENDABLE . . . ECONOMICAL—Do the job faster and save time, labor, and material with an Etnyre "Black-Topper." Over 40 years of research, quality construction methods and materials insure accurate, dependable performance. See your Etnyre dealer or write direct.

E. D. ETNYRE & CO., Oregon, Illinois

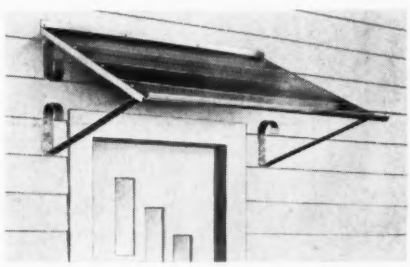


ONE-TON AIR HOIST — Air hoist has variable speeds from "creep" to 17 ft. per min. Standard length of lift is 8 ft. Hoist weighs only 75 lb. and has lifting capacity of 1 ton. Power is furnished by special vertical piston-type air motor. Safety features include safety stops, high grade alloy steel roller chains, drop-forged swivel hooks.—**Roller Tool Co., Grand Haven, Mich.** *(196)*

MAGNETIC SWEEPER—New machine, with 36-in. sweep, removes loose nails from loading yards and roads. It requires no electricity and

weighs 48 lb. Permanent Alnico magnets, guaranteed to last 5 yr., are used.—**Cesco, Inc., San Francisco, Calif.** *(162)*

ALUMINUM CANOPY—All aluminum "Hollywood" canopy is designed for strength and durability to protect doorway or window and enhance appearance and as sunshade



to make kitchens and other rooms cool in summertime. Installed with stainless steel screws and nuts and bolts. Aluminum brackets and spot-welded seams give clapboard effect. Weight of canopy, 10 lb. No sagging, warping, rattling or slapping. Rust-proof and require no painting.—**Colgate Mfg. Corp., Amityville, L. I., N. Y.** *(198)*.

THE PAST *Performance* OF LIMA CRANES and EXCAVATORS

IS A *Safe Guide* TO FOLLOW WHEN BUYING NEW EQUIPMENT

LIMA HAMILTON CORPORATION

LIMA owners have found that the past performance of their LIMA shovel, crane or dragline is a safe guide to follow when buying new crane or excavator equipment. They have experienced in LIMA, a new rugged digging power unhampered by long gear trains or conventional type bearings. LIMA "precision" air control has given them a new conception of ease of operation that is not found in ordinary machines. They also appreciate the ease of convertibility when a variety of jobs are to be done and the big output that results from fast digging cycles. These advantages plus adequate parts and service facilities in all parts of the country have made LIMA shovels, cranes and draglines first choice with experienced users everywhere.

LIMA SHOVEL AND CRANE DIVISION
LIMA-HAMILTON CORPORATION
LIMA, OHIO, U.S.A.

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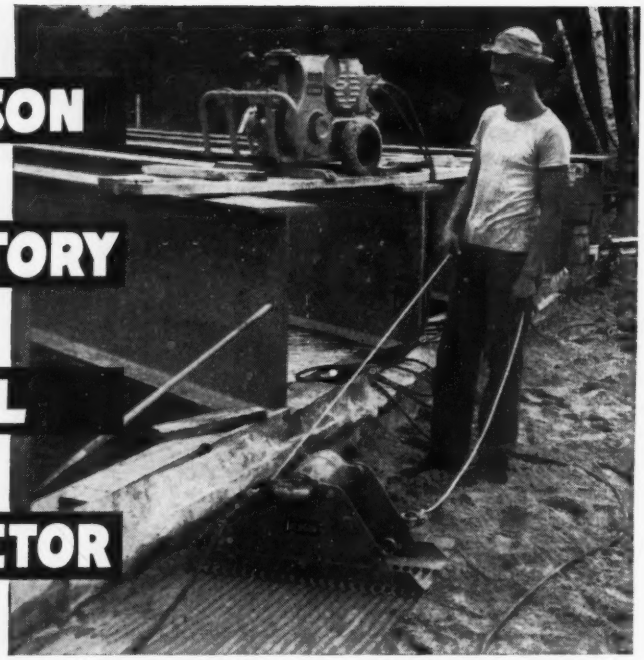
CRANES
SHOVELS
DRAGLINES

DIVISIONS OF LIMA-HAMILTON CORPORATION

LIMA, OHIO
Lima Locomotive Works Division
Lima Shovel and Crane Division

HAMILTON, OHIO
Hooven, Owens, Rentschler Co.
Niles Tool Works Co.

The JACKSON VIBRATORY SOIL COMPACTOR



"Pre-Settles" BRIDGE APPROACHES SIMILAR FILLS *Firmly Compacts Sub-bases of Factory Concrete Floors*

This remarkable new machine will give you up to 95% of MAXIMUM DENSITY (in granular soils) IN A SINGLE PASS — and do it in less than one-fifth of the time the job may be attempted with other equipment! Eliminates long delays in paving and paving settlement; assures solid sub-base for factory concrete floors on which heavy machinery is to be mounted.

Note these features: 1. PROPELS ITSELF AT 6' to 8' PER MINUTE . . . under normal conditions. Operator has nothing to lift or drop; he simply guides it. 2. FIRMLY COMPACTS 15 sq. ft. to 18 sq. ft. PER MINUTE TO A DEPTH OF 12 INCHES!

3. WEIGHS ONLY 150 LBS. Two men can easily throw it on a truck or carry it to nearby locations.

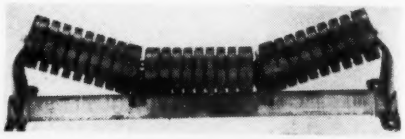
4. TIME-TESTED VIBRATORY MOTOR — used on our standard equipment for 25 years. Operates on 3-phase, 110 volt, 60 cycle AC.

THE MODEL M-2 PORTABLE POWER PLANT (see photo) usually furnished to operate Jackson Soil Compactors generates both single-phase and 3-phase 110 volt, 60 cycle AC. May be used for lights and power tools as well as running the Compactors. Will operate 4 Compactors simultaneously. JACKSON Power Plants are known throughout the nation for their outstanding reliability.

It's the ideal soil compactor for those areas inaccessible to the large tractor drawn equipment. With a change of bases, it is also highly effective on coarse gravel and rock, and for smoothing and compacting blacktop. What "pre-shrinking" is to the cotton shirt, vibrating with the Jackson Compactor is to bridge approaches and similar fills. Write, NOW, for the complete facts!

ELECTRIC TAMPER & EQUIPMENT CO., Ludington, Mich.

IDLER FOR BELT CONVEYORS— New type impact-cushioning non-pneumatic idler consists of rubber rings mounted on idler core. High



resiliency of rubber rings solves impact problem by decelerating lump. It is said to increase belt life materially.—**Goodyear Tire & Rubber Co., Akron, Ohio.** *(148)*

BRANDING IRONS — Individual characters on new line of electric branding irons, suitable for branding tires, timber and batteries, are readily interchangeable while hot by

simple adjustment of set screw. There are stock sizes for eight or less characters, ¼, ⅜ and ½ in. high. They operate off 110 or 220 v. circuit, a.c. or d.c., any cycle, and are equipped with 6-ft. cord and plug.— **Hexacon Electric Co., 239 W. Clay Ave., Roselle Park, N. J.** *(159)*

McKiernan-Terry

PILE HAMMERS and EXTRACTORS

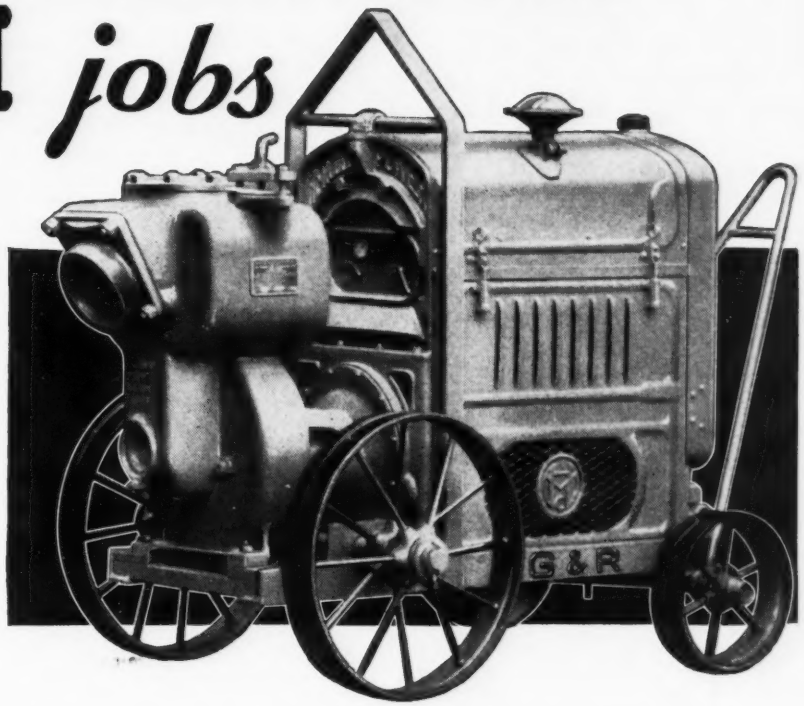
Now available in a complete, standardized line of ten double-acting hammers, five single-acting hammers and two double-acting extractors. Write us for free descriptive Bulletins 55 and 57.

McKIERNAN-TERRY CORPORATION

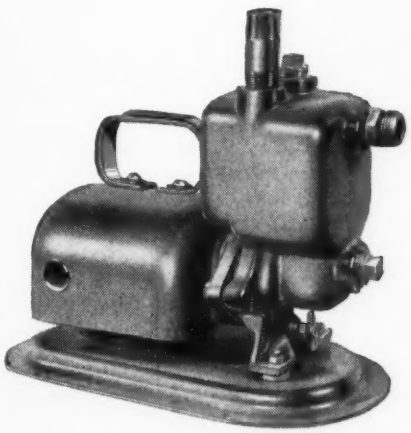
Manufacturing Engineers

14 Park Row New York 7, N. Y.

TOUGH *pumps that will handle the* TOUGH *jobs*



Gorman-Rupp Heavy Duty Pumps are big, tough and dependable. The Pump pictured here is the Model 1602 (90M), capacity 1,500 GPM at average total head.



"HANDY" PUMP

A tiny pump weighing only 20 lbs., remarkable for performance. Fitted with pipe or common garden hose, this pump will lift up to 25 ft. Delivers 8 GPM at 40 lbs. pressure. Electric motor driven—self-priming. An extremely handy, dependable and trouble-free pump for all kinds of pumping jobs.

Pumps and other equipment used on construction work must take a lot of punishment. Gorman-Rupp centrifugal pumps can help you complete your contracts on time and at a greater profit. They will stay on the job day in and day out for months at a time if necessary with no costly loss of time for repairs.

Gorman-Rupp self-priming centrifugal pumps are by far the simplest pumps made and are streamlined inside where streamlining counts. They will handle any muck, weeds or gravel that will pass the intake strainer. Every part of a Gorman-Rupp pump has long wear built into it and every wearing part is easily and quickly replaced with common tools.

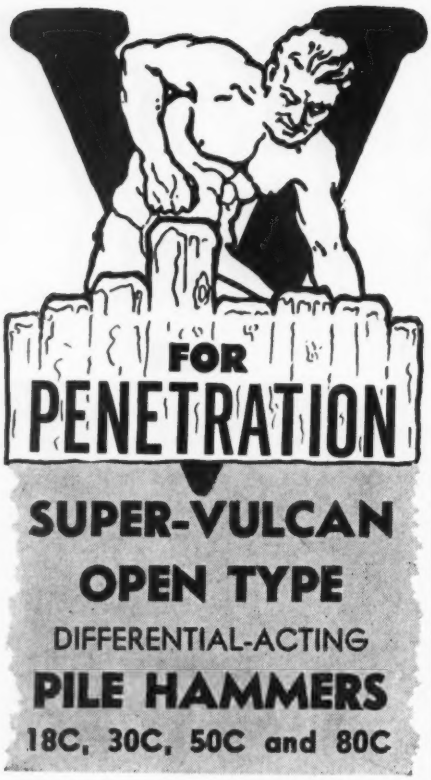
There is a Gorman-Rupp pump as small and handy as a bag of tools, capable of delivering 1000 G. P.H. and there are other pumps with capacities up to 125,000 G. P. H.

Gorman-Rupp pumps will out-live and out-perform any other comparable equipment.

Write for further detailed information or call your nearest distributor.

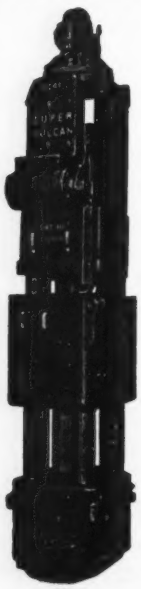
THE GORMAN-RUPP COMPANY
308 N. BOWMAN STREET • MANSFIELD, OHIO

Gorman-Rupp Pumps — Unsurpassed for Pumping Fast



SUPER-VULCAN
OPEN TYPE
DIFFERENTIAL-ACTING
PILE HAMMERS
18C, 30C, 50C and 80C

• In Super-Vulcan this symbol of power becomes an active, smashing force that sinks any kind of pile quickly and economically on the toughest job. That's where claims give way to facts, and that's where Super-Vulcan has proved and continues to prove its exceptional value through dependable performance that produces positive penetration.



Sizes
18C—30C—50C—80C
meet all needs

For on the job Super-Vulcan delivers twice the usual number of powerful blows per minute on 25 to 35 per cent less steam per blow. And its rugged strength, long-time durability, simple design and ease of operation produce pile driving efficiency that means more piles down per dollar.

Find out about Super-Vulcan, the pile hammer that gets you greater penetration per blow. Write for full details.

VULCAN IRON WORKS
Since 1852
331 North Bell Avenue
Chicago 12 ---Illinois

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

STEELFRAME CONSTRUCTION—(Research study) Describes test results on Pierce house, with detailed explanation and discussion of structural and thermal tests made on lightweight steel construction system for small homes. It is based on Pierce system of horizontal construction, which is described and compared with more conventional building methods. Priced at 50 cents.—**John B. Pierce Foundation, Raritan, N. J.** *(549)*

DOOR-FRAME ASSEMBLY—(8-p. booklet) Describes new metal door-frame assembly for use with Herculite glass doors, showing 12 available styles and giving dimension tables.—**Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh, Pa.** *(550)*

BROADCASTING TRANSMITTER BUILDINGS—(60-p. magazine article) Major portion of issue No. 9 of Western Electric Oscillator summarizes objectives and factors necessary for good transmitter building design. Suggested procedures, examples of present-day construction and suggestions of future trends are offered.—**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.** *(565)*

POWER CRANES AND SHOVELS—(40-p. booklet) Presents functional design, job applications, and job analysis of power cranes and shovels. Text and pictures are taken from color strip slide film entitled "The Changing World," which is also available for loan without charge.—**Power Crane & Shovel Association, 74 Trinity Place, New York 6, N. Y.** *(552)*

STEEL SHELVING—(6-p. catalog) Lists various sizes of steel shelving for cabinets, files, trucks and other uses.—**Precision Equipment Co., 2658 N. Long Ave., Chicago 39, Ill.** *(553)*

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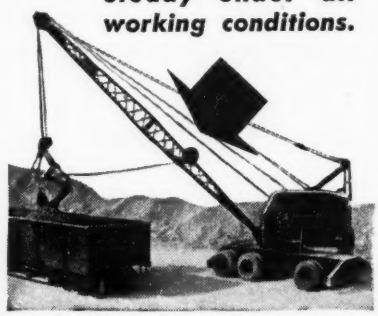

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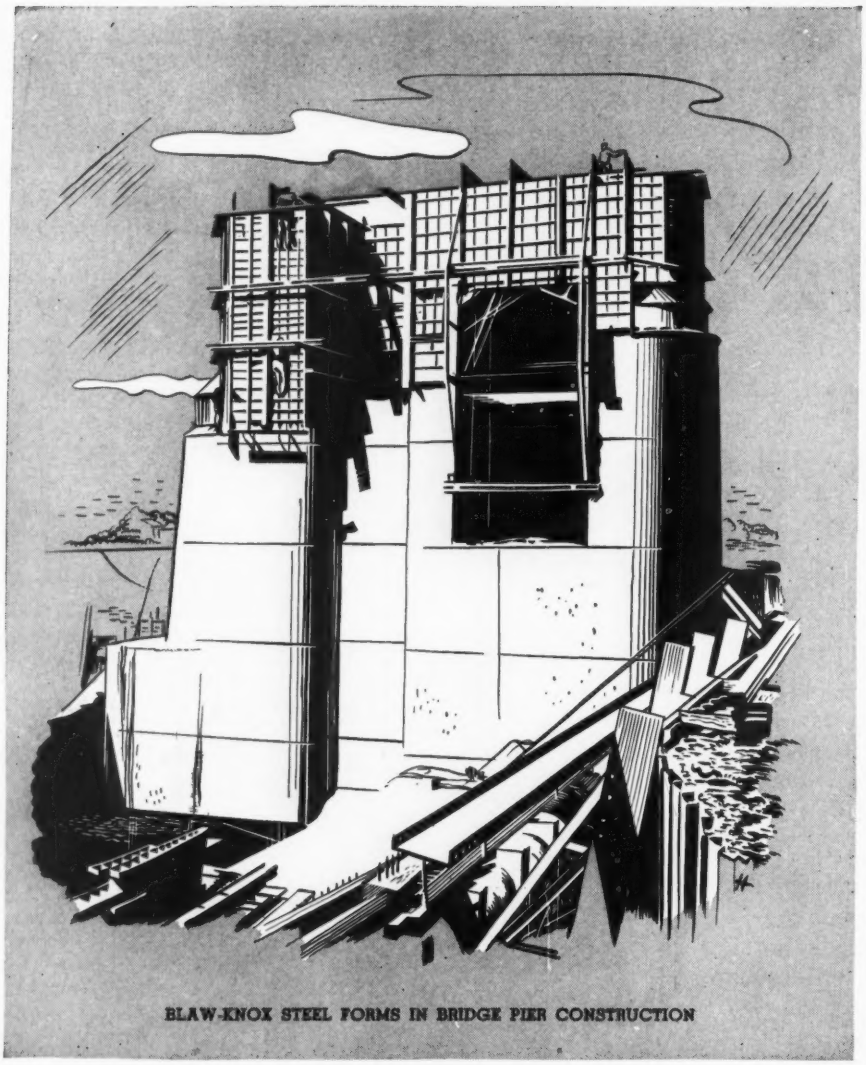
DRILL PIPE—(22-p. booklet) Tells story of development of plastic-coated drill pipe for drilling oil wells in highly corrosive fields. Results of field tests and laboratory test program are featured.—**Spang-Chalfant Division, National Supply Co., Grant Bldg., Pittsburgh 30, Pa.** *(546)*

LOW-BED TRAILERS—(18-p. bulletin) Lists advantages of Olson low-bed trailers. Matching dollies are also described.—**Olson Mfg. Co., Boise, Ida.** *(547)*

FRAME CONSTANTS—(32-p. handbook) Contains 27,050 constants for 1,390 members, which will greatly facilitate analysis of almost any indeterminate structure. Also available is 24-p. booklet on sewage treatment works.—**Portland Cement Association, 33 W. Grand Ave., Chicago 10, Ill.** *(551)*



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OIL FILTERS—(16-p. catalog) Contains scaled diagrams of many types of oil filters for diesel engine applications, with detailed specification charts giving all necessary technical information on construction, dimensions, capacity, weight, etc.—**Purolator Products, Inc., Newark 2, N. J.** *(555)*

WATERPROOFING—(4-p. circular) Describes uses of No. V transparent waterproofing for outside walls of brick, stone, stucco and kindred structures.—**Ranetite Mfg. Co., 1917 S. Broadway, St. Louis 4, Mo.** *(556)*

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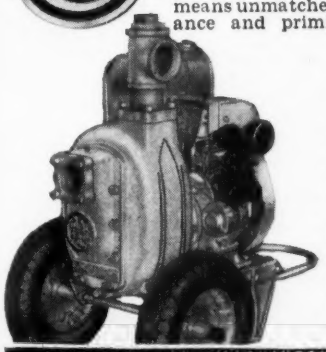

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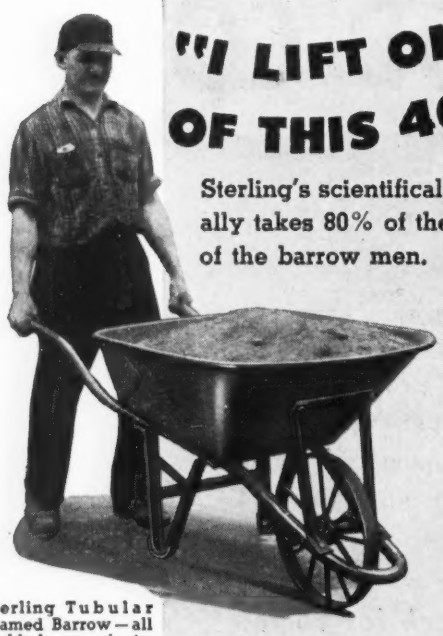

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CONCRETE AND MASONRY CONSTRUCTION—(4-p. pamphlet) Describes methods and products used to solve problems in concrete and masonry construction. Specifications are given for concrete, mortar, surface protection and joints. Highlights are presented on maintenance and repair problems, such as sealing leaks against pressure and repairing structures above and below grade.—**Sika Chemical Corp., 35 Gregory Ave., Passaic, N. J.** *(558)*

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MATERIAL HANDLING EQUIPMENT—(92-p. catalog) Describes complete line of vibratory material handling equipment, which includes electromagnetic vibrators, packers, feeders, vibrating grizzlies, lawns, paper joggers, hopper level switches, vibrators, jolters, feeder machines and mechanical shaft seals. Construction and maintenance tools are also covered.—**Syntron Co., Homer City, Pa.** *(560)*

JACKS—(4-p. bulletin) Gives detailed descriptions of Simplex lever, screw and industrial jacks. Specification charts on Simplex-Jenny center-hole hydraulic pullers, Util-a-Tool, drop forged steel trench braces and timber braces. — **Templeton, Kenly & Co., 1020 S. Central Ave., Chicago 44, Ill.** *(561)*

LUBRICATING GREASES—(12-p. magazine) Covers flow properties of lubricating greases, with relationship of apparent viscosity. It describes laboratory work which has attempted to relate apparent viscosity to low temperature torque, low temperature consistency and dispensing characteristics of lubricating greases.—**The Texas Co., 135 E. 42nd St., New York 17, N. Y.** *(562)*

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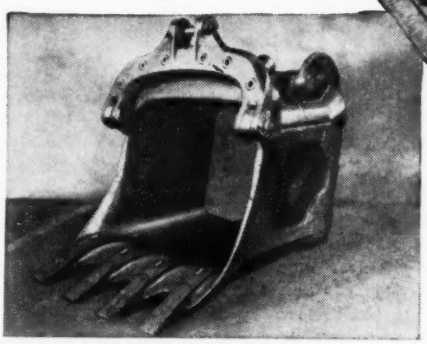

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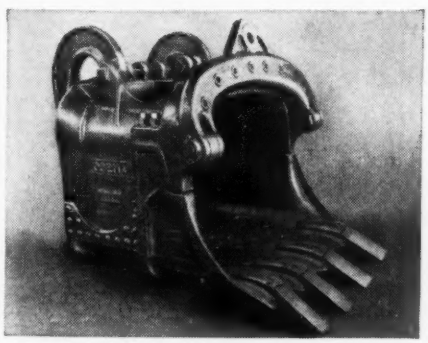

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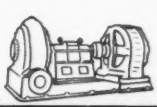

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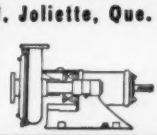

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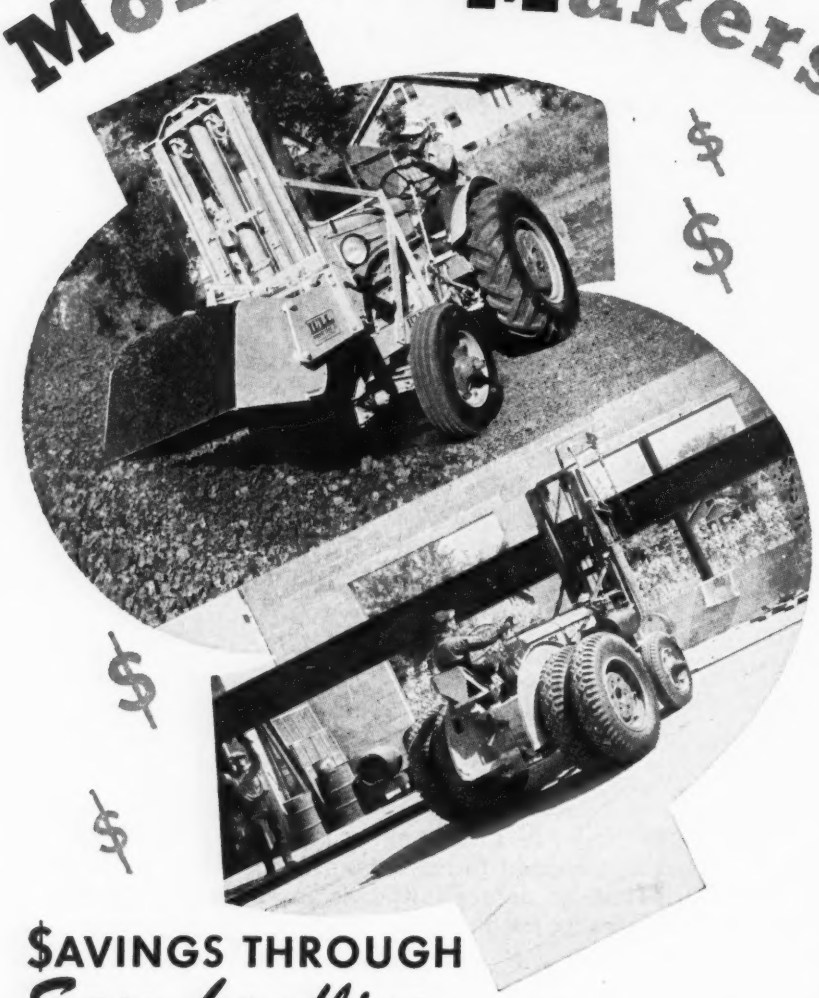

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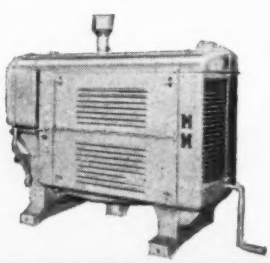

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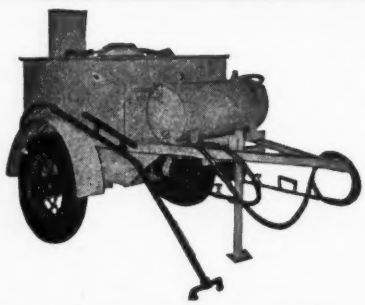
JOINT INSTALLING MACHINES—(4-p. bulletin) Describes operations of Flex-Plane joint installing machines, which are now equipped for vibratory joint cutting. Various types of longitudinal dummy joint applications are illustrated. — **Flexible Road Joint Machine Co., Warren, Ohio** *(520)*

BELT CONVEYORS—(New bulletin) Gives vital information for laying out belt conveyor system and points out features of Robins Idlers. —**Hewitt-Robins, Inc., Passaic, N. J.** *(527)*



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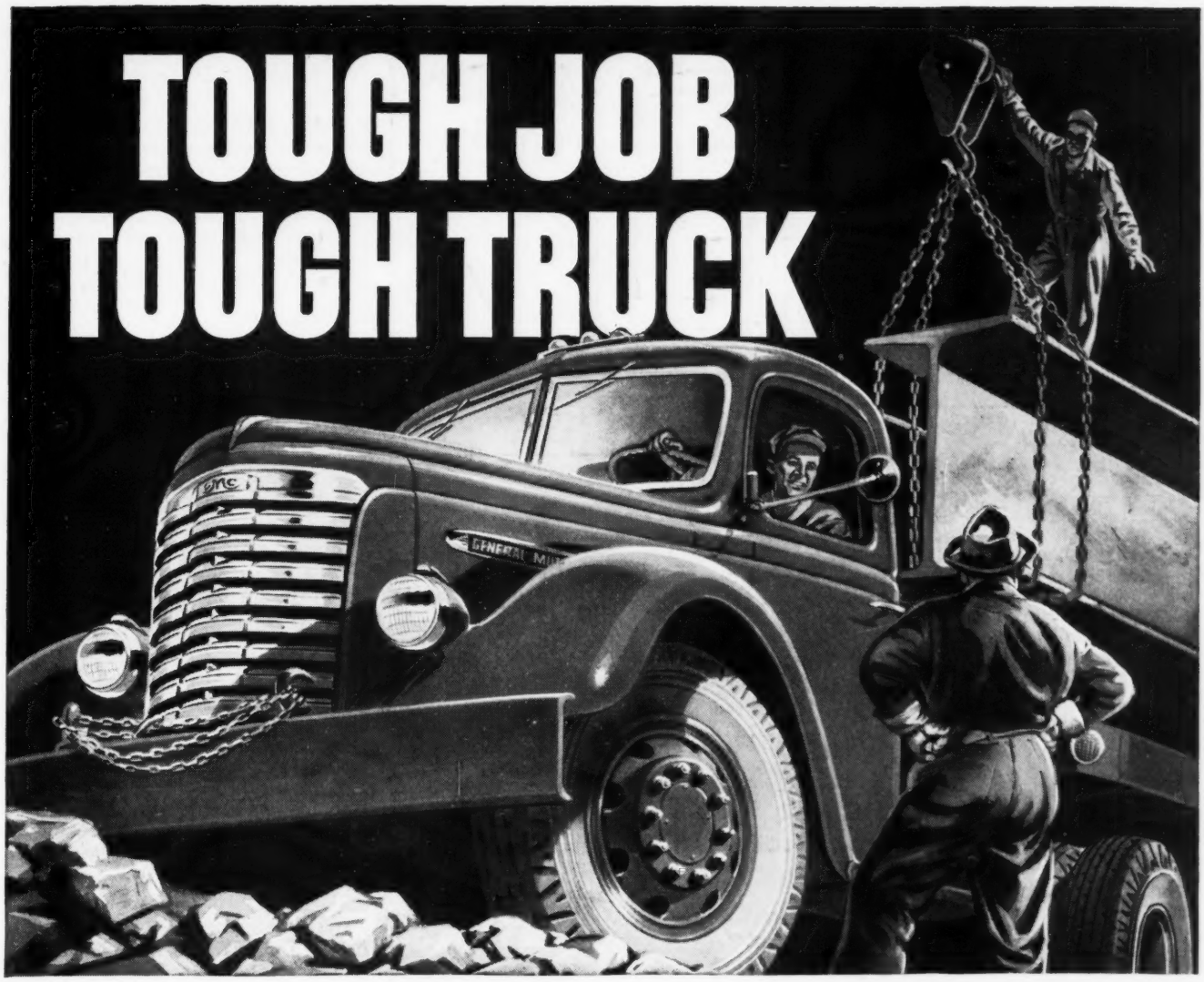

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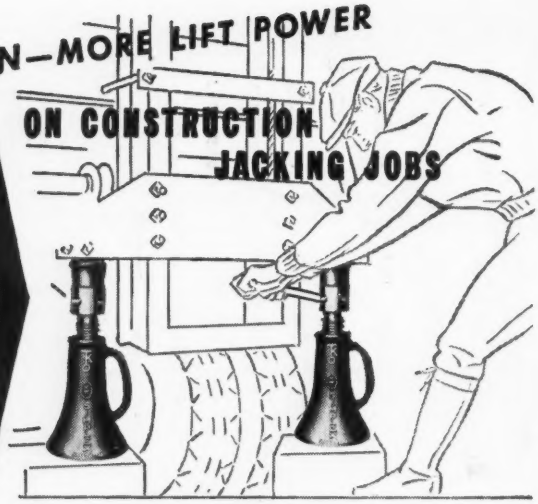

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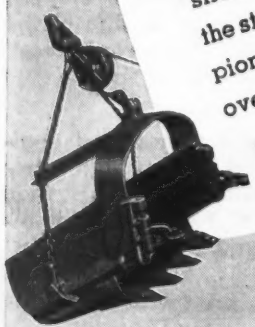

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SAND FILTER—(12-p. bulletin) Describes automatic backwash rapid sand filter for purifying industrial water supplies, sewage treatment, trade waste recovery, municipal water treatment, and for raw water purification in paper mills.—**Hardinge Co., Inc., York, Pa.** *(524)*

WELLPOINT SYSTEMS—(72-p. catalog) Contains latest information and photos of wellpoint systems for dewatering emergency and permanent water supply systems. Photos and line drawings show typical layouts and case histories.—**Griffin Wellpoint Corp., 881 E. 141st St., New York 54, N. Y.** *(523)*

CONCRETE TRUCKS—(Illustrated folder) Describes FWD trucks for mounting ready-mixed concrete bodies.—**Four Wheel Drive Auto Co., Clintonville, Wis.** *(522)*

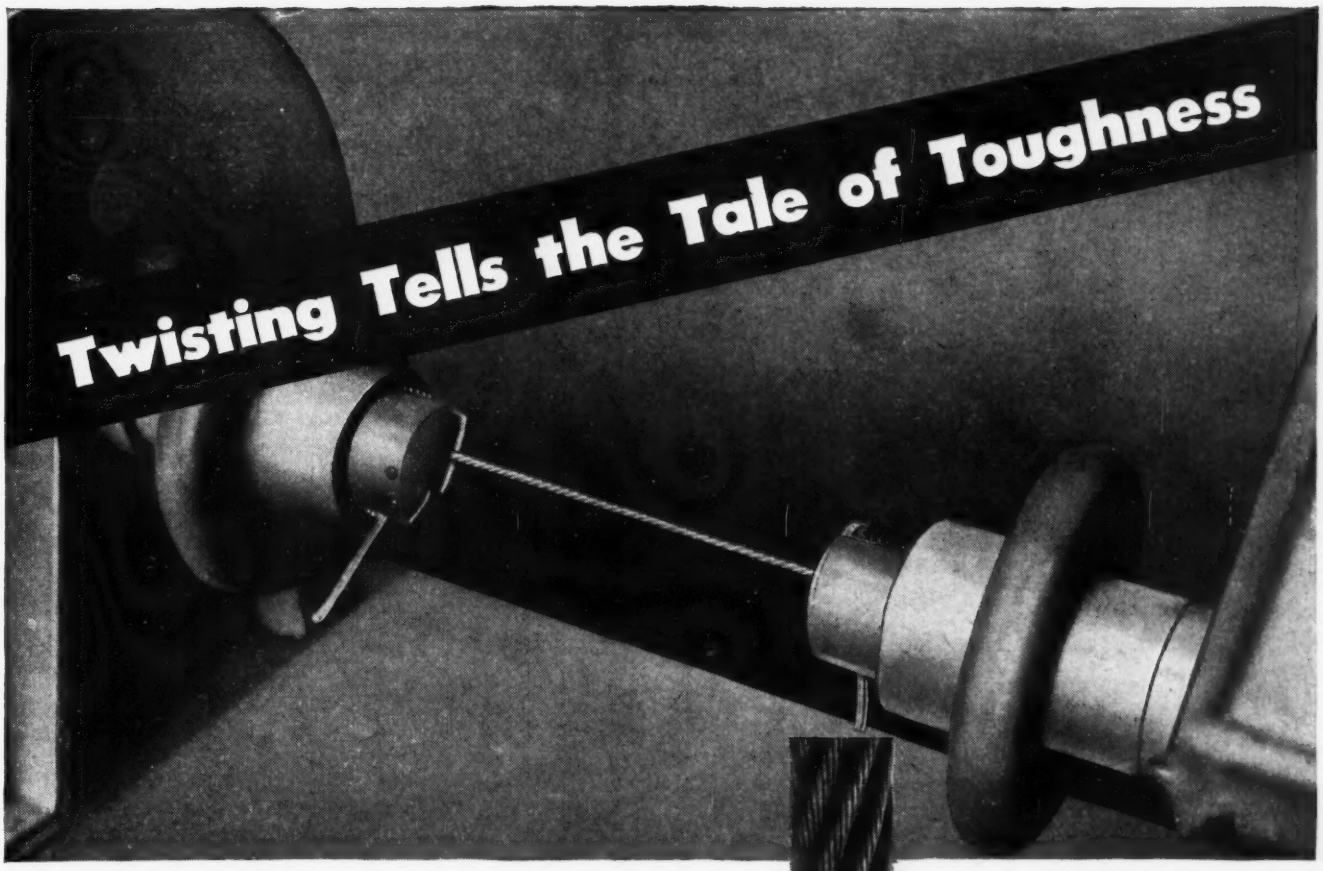
SYNTHETIC RESINS—(20-p. booklet) Includes description of properties and uses of all company's synthetic resins. Chart provides key to specific uses.—**Hercules Powder Co., Wilmington, Del.** *(526)*

BELT CONVEYORS—(160-p. catalog) Provides complete selection of standardized belt conveyor units, so indexed and classified that reference to proper tables makes it easy to determine correct conveyor to suit given need. Complete line of anti-friction idlers is also listed.—**Jeffrey Mfg. Co., Columbus 16, Ohio** *(532)*

ARC WELDERS—(36-p. catalog) Contains illustrations, descriptions, dimensions and specifications on complete line of Simplified arc welders, electrodes and accessories.—**Hobart Brothers Co., Troy, Ohio** *(528)*

STEEL SASH—(32-p. catalog) Illustrates design and construction features of new Lok'd Bar steel factory sash, giving dimensions and physical data in full-scale diagrams. Window opening dimensions are tabulated.—**Hope's Windows, Inc., Jamestown, N. Y.** *(529)*

VIBRATION MOUNTS—(8-p. bulletin) Describes Rexon mounts, which feature high vibration dampening properties of rubber loaded in shear.—**Hamilton Kent Mfg. Co., Kent, Ohio** *(536)*



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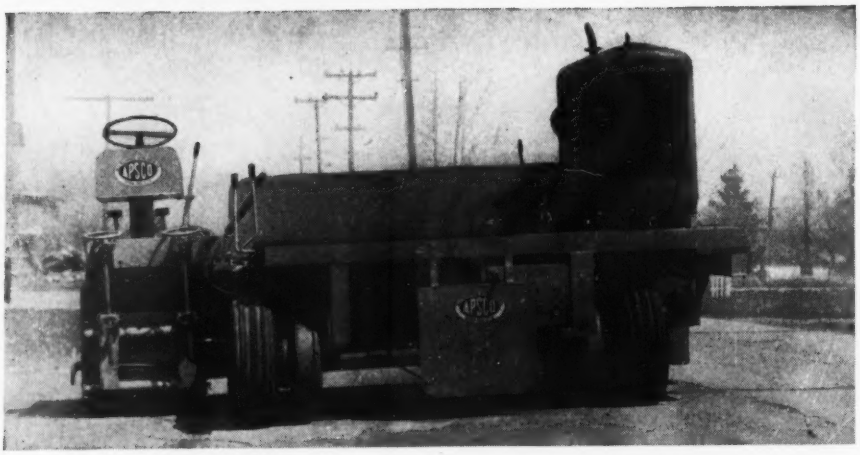
PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California

ROADS TO WIDEN ?

you need this team...



APSCO Road Widener

● This modern machine offers contractors, state, county and city highway departments a practical, time and labor saving method for widening roads.

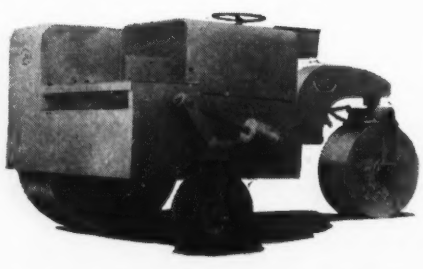
It handles all types of material from 2" down, including hot or cold bituminous mix, sand, gravel, stone, dirt, etc. Standard unit will spread a 2 to 4 foot width—any depth—and will handle over 120 tons an hour. Other widths available.

The machine is easily controlled by operator and truck driver merely dumps material into hopper while widening machine is in operation. The machine is accurate—leaves a straight edge without use of road forms—no raking or carrying back necessary.

Write for general specifications

APSCO Trench Roller

One of the most practical features of the APSCO Trench Roller is the pneumatic tired leveling wheel with adjustment by powered screw-type leveling unit. An advantage both in operation and when hauling roller from one job to another. In operation, the elasticity of the pneumatic tire prevents roller from damaging forms when leveling wheel hits an obstruction. In hauling tire eliminates side slipping when loading on carry all or flat car . . . Automotive type steering gives greater maneuverability providing 45° turning radius. Front roll 15" wide—rear 18" wide. Write for complete specifications.



THE ALL-PURPOSE SPREADER CO.

FULLER ROAD . . . ELYRIA, OHIO

SAFETY EQUIPMENT—(4-p. folder) Features Nitroflex aprons and sleeves, new line of protective apparel for industry. Work gloves, cradles for drums and barrels, chain grips, and door opener are also covered.—**Industrial Products Co., 2820 N. Fourth St., Philadelphia 33, Pa.** *(530)*

THAWERS AND HEATERS—(16-p. booklet) Describes equipment for heating, thawing, melting ice and snow, and providing temporary heat in various applications. — **Hauck Mfg. Co., 124-136 Tenth St., Brooklyn 15, N. Y.** *(525)*

VALVES—(12-p. folder) Describes new 270-U Bronze Gage valve with Monel seat rings, as well as 34 other valves with pressure ratings and size ranges.—**Jenkins Brothers, 80 White St., New York 13, N. Y.** *(533)*

CONCRETE PLANTS—(32-p. booklet) Presents pertinent information, with 60 photos and 30 illustrations, on laying out stationary and mobile concrete plants. Also available is 8-p. booklet on all-welded clamshell buckets.—**C. S. Johnson Co., Champaign, Ill.** *(534)*

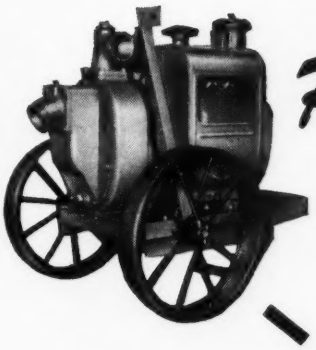
BORING TOOLS—(6-p. folder) Illustrates typical industrial boring applications and lists performance of Kwik-Size boring tools through comprehensive sequence of operations. It covers full range of boring head sizes. — **Kaukauna Machine Corp., Kaukauna, Wis.** *(535)*

SCRAPERS—(Two pamphlets) Describe and illustrate with action photos hydraulic and cable-operated scrapers.—**LaPlant-Choate Mfg. Co., Inc., Cedar Rapids, Iowa** *(537)*

BATTERY CHARGER AND ARC WELDER—(Single sheet) Describes new portable combination battery charger and arc welder.—**Larkin Lectro Products Corp., 160 W. 146th St., New York 30, N. Y.** *(538)*

BULLDOZER—(Illustrated folder) Describes new rubber-tired Tournadozer for dozing and pushing. Specifications are given.—**R. G. LeTourneau, Inc., Peoria, Ill.** *(539)*

MATERIALS HANDLING EQUIPMENT—(86-p. catalog) Contains data and large-size illustrations of each type of equipment, with installations photos. Cover has special filing tab for quick visual reference.—**Lewis-Shepard Products, Inc., 290 Walnut St., Watertown 72, Mass.** *(540)*



Picked for "Problem" Pumping

A Marlow pump, mounted on a "boat" behind this ditcher, dewaters the excavation as fast as the ditcher moves along. Men follow right behind, laying and connecting pipe... No place here for anything but the fastest, most dependable self-priming pump that money buys.

Marlows handle more water per horsepower than any other self-priming centrifugal pumps. They prime automatically by the exclusive diffuser method: no recirculation, no valves to adjust, no wasted power. They're so reliably self-cleaning — even with trash-laden ditch water — that they don't have, *don't need*, a clean-out hole.

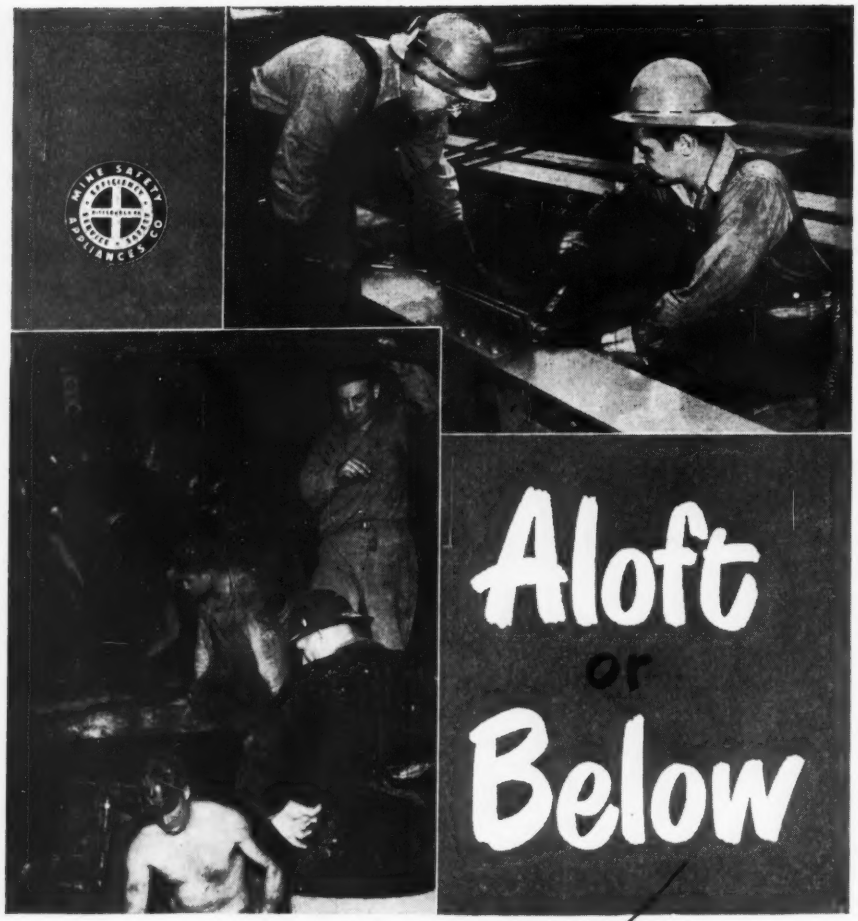
MARLOW SELF-PRIMING CENTRIFUGAL PUMPS

Marlow pump used by contractor W. W. Willoughby on this Billings, Montana, sewer excavation job is the 4-inch Model 417. Other Marlow construction pumps in sizes 1½- to 10-inch, capacities 1500 to 240,000 gallons per hour. Gasoline, Diesel, electric, or belt-driven. Wheel or skid mounted. Write for interesting Marlow literature. Marlow Pumps, 516 Greenwood Ave., Ridgewood, N. J.

MARLOW PUMPS

RIDGEWOOD • NEW JERSEY

MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF CONSTRUCTION PUMPS



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SKULLGARDS

for better Head Safety!

On *every* construction job where the danger of falling objects, obstructions or confined spaces expose heads to injury, M.S.A. Skullgards provide proved, dependable protection!

Used by the hundreds of thousands throughout the construction industry, these favorite work hats interpose the high fracture-resistant strength of high-pressure molded, laminated bakelite between danger and the worker's head—correctly designed with high crown for ample head clearance; shock-absorbing inner head cradle; flexible long-wearing sweatband; self-ventilation coolness.

M.S.A. Skullgards are non-deteriorating from exposure to water, perspiration, grease, or common chemicals, have a high dielectric strength, and are available in all standard or adjustable hat sizes. Write for details on these light-weight, easy to wear work hats—ask for Bulletin DK-13.

MINE SAFETY APPLIANCES COMPANY
Braddock, Thomas and Meade Streets • Pittsburgh 8, Pa.
District Representatives in Principal Cities
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MONTREAL • VANCOUVER • CALGARY • WINNIPEG • NEW GLASGOW, N. S.

EQUIPMENT MEN

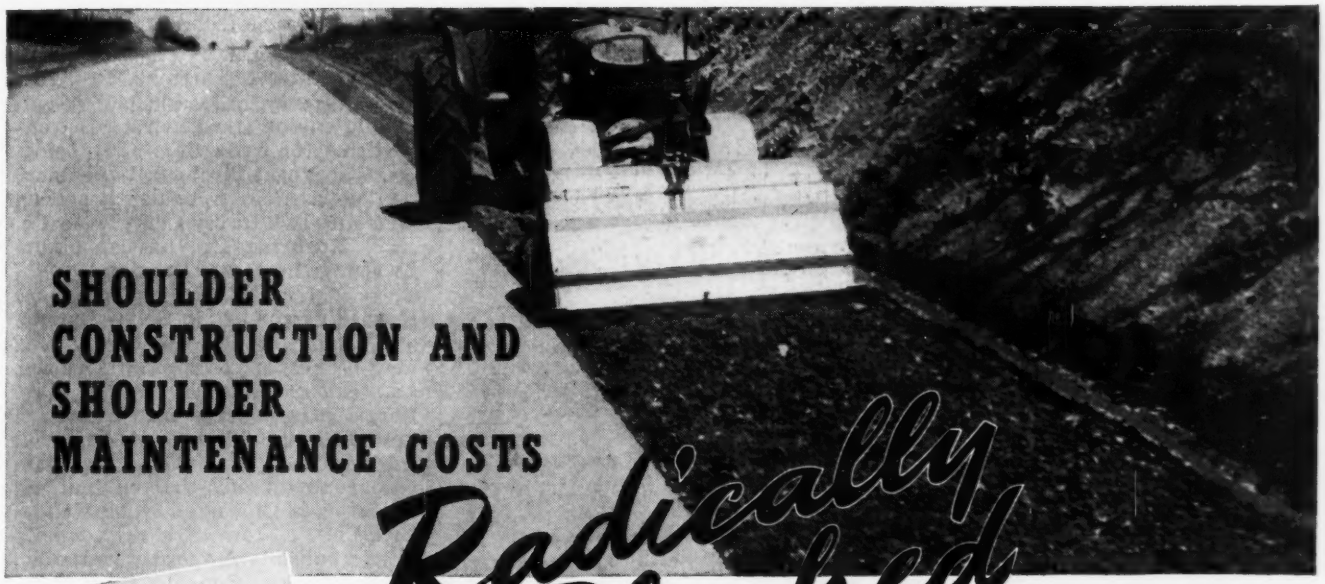
and Their Companies

Current developments among manufacturers relating to expansion of services, shifts in personnel, and other changes, include the following:

FIELD SALES CHANGES—Dresser Mfg. Division has appointed **W. L. Shelgren** as Appalachian district manager, succeeding C. J. Gregg, retiring after 43 years. . . . **Albert E. Brodigan** is now regional representative in Caribbean area for **Borg-Warner International Corp.** . . . **Rex Price** is new Southwest district representative for **Galion Iron Works & Mfg. Co.** . . . **A. H. Clem** is field sales supervisor, **P. C. Staples, Jr.** is product supervisor, and **R. R. Pierce** has also been appointed to the product supervision department by Special Chemicals Division of the **Pennsylvania Salt Mfg. Co.** . . . **Kenneth F. Ames,** general sales department member, and **R. S. Cornell** and **Truman E. Sage,** district sales representatives, have been named assistant sales managers of the Central, Eastern and Western sales divisions for **Caterpillar Tractor Co.** . . . **Robert C. Robinson** has been named eastern sales manager for **Sloane-Blabon Corp.** . . . **Bailey Meter Co.** has appointed **G. R. Mays** manager of its St. Louis, Mo. branch office. . . . **C. W. Myers** is now divisional field engineer in charge of sales in Texas, Oklahoma, Arkansas, Louisiana and Western Tennessee for **Davey Compressor Co.** . . . **Robert Highley** has been named manager of the New York general sales division for the **Bemis Bro. Bag Co.** . . . **Robert C. Dunbar** has been appointed West Coast representative for **American Hoist & Derrick Co.** . . . **International Harvester Motor Truck Division,** recently promoted **J. P. Feyen,** formerly retail truck manager at Fresno, Calif., to assistant manager of the Spokane, Wash., branch. . . . **Fred C. Wilcox** has become New York manager of Moto-Mixer and Moto-Agitator sales for **Chain Belt Co.** . . . **Robert H. Fox,** for some years sales engineer for **Six Wheels Inc.,** has now formed his own company to be known as the **Robert H. Fox Co.** of Van Nuys, Calif.

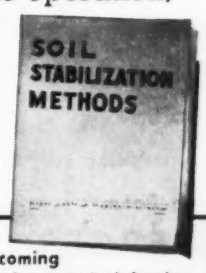
DEALER APPOINTMENTS—Clark-Wilcox Co. of Boston, Mass., has been named distributor in three New England states for the **Ralph B. Carter Co.,** manufacturers of sewage and water treatment equipment. . . . **Buffalo-Springfield Roller Co.** has announced appointment of

(Continued on page 164)



SHOULDER CONSTRUCTION AND SHOULDER MAINTENANCE COSTS *Radically Slashed* with the SEAMAN MIXER

Shoulder stabilization is highly profitable in terms of lower maintenance costs and in greater traffic safety. With the SEAMAN MIXER, the initial stabilization costs can generally be cut as much as 40% in comparison to former methods, — for in most cases, — the aggregate already present in existing shoulders is entirely suitable for stabilization with oil, cement or other binders without trenching out or bringing in a single yard of borrowed material . . . For example,— in an eastern state, the Highway Department formerly kept 40 motor patrols busy on shoulder maintenance alone. Following every severe rain, scores of truckloads of gravel were required to replenish material which had washed away and what's more, drains and catch basins were plugged in the process . . . Shoulder stabilization with SEAMAN MIXERS proved to be the answer. The SEAMANS loosened the in-place aggregate to the required depth and in the same operation, started the mix . . . Total cost of scarifying, shaping and mixing was 5 cents per yard. So for similar low-cost shoulder stabilization,—do it with a SEAMAN.



Shoulder stabilization will prevent slab deterioration, traffic hazards and erosion such as occurred here.

SEAMAN MOTORS, Inc.
MILWAUKEE 3, WISCONSIN

Requests keep right on coming in for this handy, practical book, "Soil Stabilization Methods" — compiled by Seaman engineers. Have you sent for your copy? Ask for Bulletin C-25.

STOW CONCRETE VIBRATORS

For a Better Job . . . and EASIER, LONGER USE

It's the flexible shaft that takes the beating . . . up to 9000 vibrations a minute. But in the STOW, you get the best flexible shafting known, built by the pioneer in flexible shaft manufacture and application. The unmatched STOW Flexible Shaft, coupled with a choice of power (gasoline) units and Vibrator Heads, gives you the concrete vibrator *best* for your work.

Every STOW Concrete Vibrator turns in better performance and stays on the job

Because

1 the Vibrator Head is RIGHT;

2 the Motor is RIGHT;

3 the Carryhandle is RIGHT; and

4 most of all, the FLEXIBLE SHAFT is RIGHT.

Write for complete folder on various types and equipment that aid you in meeting the strictest specifications in concrete work.

- 3 hp Vibrator for wide uses in harshest concrete. Variable speed.
- 1½ hp, general purpose.
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STOW Manufacturing Co., 31 Shear St., Binghamton, N. Y.

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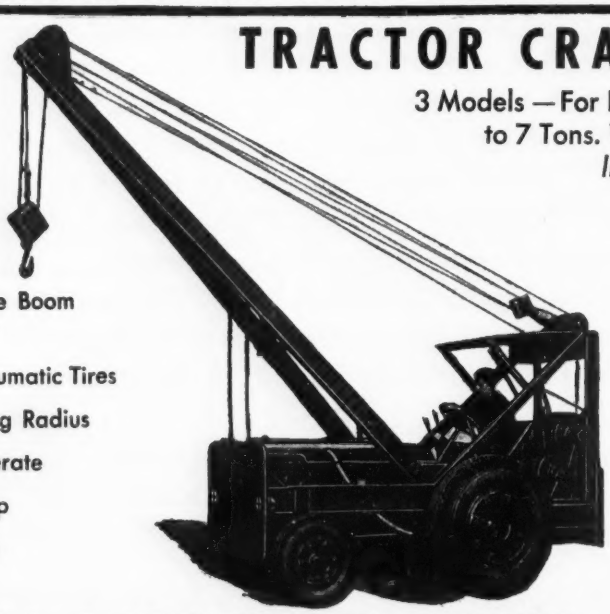
"The Name that Carries Weight"

MATERIAL HANDLING EQUIPMENT

TRACTOR CRANES

3 Models — For Loads Up to 7 Tons. *Write for literature.*



Special Type Boom Designed

Solid or Pneumatic Tires

Short Turning Radius

Easy to Operate

Low Up-Keep

Clear Vision

Live Boom

MERCER ENGINEERING WORKS, INC.

Plant: Clifton, N. J.

SALES REPRESENTATIVE

MERCER-ROBINSON COMPANY, INC.

30 CHURCH ST., NEW YORK 7, N. Y.

(Continued from page 162)

O. S. Stapley Co. of Phoenix, Ariz., as distributor in Arizona. . . . **Andrews Agency,** Milwaukee, Wis., will handle engine and generator set advertising for **Buda Co.** . . . Appointment of **Vogel-Birch, Inc.,** Ashland, Ky., as a Class B dealer has been announced by **Davey Compressor Co.** . . . **Koehring Co.** has appointed **Sweeney Brothers Tractor Co.** of Fargo, N. D., as distributor for Koehring products in South Dakota. . . . **Bailey Meter Co.** has opened new branch offices in New Orleans, La., and Schenectady, N. Y. . . . **Borg-Warner Corp.** has created a new division to handle its Ingersoll utility unit, and will consolidate management, sales and engineering functions in Chicago. . . . **Air Reduction Co.** has formed a new wholly owned subsidiary, the **Air Reduction Pacific Co.** . . . **Ronaflex** tubing will now be distributed exclusively by the manufacturers, **Ronaflex Tubing Co.,** Philadelphia. . . . **Dravo-Doyle Co.,** Pittsburgh, Pa., has been appointed distributor for the **Mead Hevitrailer.** . . . **Pioneer Welding Equipment Co.,** of Sioux City, Iowa, has been appointed distributor for **Hobart Brothers Co.**

HOME OFFICE CHANGES—Hugh Comer, Alabama cotton manufacturer, has been elected to the board of directors of the **Allis-Chalmers Mfg. Co.** . . . **H. C. Peinert** has become production manager of the High Explosives Section for the **DuPont Co.'s** explosives department. . . . **Chain Belt Co.** has announced the election of **B. F. Devine, L. B. McKnight** and **O. W. Carpenter** as vice-presidents. . . . **Dr. Fred F. Kendall** has been appointed director of research for the **Master Builders Co.,** Cleveland. . . . **L. C. LeBron** is now assistant manager of the explosives department's contractors' division of the **Hercules Powder Co.** . . . **G. E. Tenney** is now service manager for the **Lincoln Electric Co.** . . . **Thomas B. Hasler** has been elected chairman of the board of directors of the **Wilson Welder and Metals Co., Inc.,** a subsidiary of **Air Reduction Co.** . . . **Howard A. Marple** has been appointed director of the newly created advertising department for the **Monsanto Chemical Co.** . . . **J. L. Miller,** formerly production superintendent, has been appointed plant manager of the **Johns-Manville** factory at Zelienople, Pa. . . . **Carl R. Olson** has been named vice-president of four companies within the **Kaiser** organization: **Permanente Cement Co., Standard Gypsum Co.** of California; **Permanente Steamship Corp.,** and **Glacier Sand & Gravel Co.** . . . **Howard L. Phillips** is now assistant export manager for **Nordberg Mfg. Co.** . . . **Louis Allis Co.**

(Continued on page 166)

ON THE ROAD . . AND ON THE JOB

You'll be Out Ahead

WITH

MICHIGAN

MODEL T6K — ⅜ Yd., 6-Ton

Michigan rubber tired truck shovels are famous for speed on the road and on the job. Designed as a unit, with a heavy frame built for the job. Plenty of power gives you 30 mph road speeds. Easy operating air valves control air ram clutches for speedy crowding, hoisting and a 5.5 rpm swing that means extra yardage.

MODEL TMDT-16 — ½ Yd., 10-Ton

MODEL C-16 — ½ Yd., 8-Ton

For those swampy jobs the model C-16 — balanced weight distribution — wide pads — low ground pressure — air controlled mechanism, travel and steering.

MODEL TLDT-20 — ½ Yd., 12-Ton

Get the complete details about the entire line of MICHIGAN Mobile SHOVELS-CRANES.

MICHIGAN

MICHIGAN POWER SHOVEL COMPANY

495 SECOND STREET • BENTON HARBOR, MICHIGAN

CUT COSTS... SPEED WORK

with this steel sheeting

ARMCO Steel Sheeting is ideal for trenches, core walls, cofferdams, bulkheads, bank protection, low retaining walls and other similar uses.

Light weight and a small displacement area make ARMCO Steel Sheeting a fast-driving, cost-cutting tool on either temporary or permanent construction. You'll like the way it saves you time and money.

Both interlocking and flange type ARMCO Sheeting can generally be driven to full penetration before excavation. The corrugated metal design assures ample strength without excess bulk. It means easier handling, faster driving and lower costs.

Another big advantage is that on temporary jobs ARMCO Sheeting can be readily pulled and used over and over again. A convenient slot near the top of the section makes pulling easy.

There is no problem in hauling or storing ARMCO Steel Sheeting. Sections nest together and save space. Interlocking type sheeting is available in gages 12 to 7; flange type in gages 12 to 3. Standard lengths are from 6 to 20 feet or more in multiples of 2 feet. Write for prices and complete information. Armco Drainage & Metal Products, Inc., 1285 Curtis St., Middletown, O.

ARMCO

STEEL SHEETING

ARMCO

(Continued from page 164)

has created three vice-presidencies to handle expanding operations; elected were: **Louis Allis, Jr.; Frank O. Kovick,** and **T. R. Wieseman.** . . . **John T. Brown** has been named vice-president of the **J. I. Case Co.** . . . **A. R. Bollaert** has been appointed general manager of the Dicalite Division of **Great Lakes Carbon Corp.** . . . **United States Steel Corp.** of Delaware has announced the appointment of **R. Conrad Cooper** as industrial engineering vice-president. . . . **W. H. Scherer** has been appointed general manager and a director of the **Ransome Machinery Co.** . . . **William O. Lawrence** has been appointed assistant manager of the Buffington, Ind. plant of **Universal Atlas Cement Co.** . . . **William T. Kelly, Jr.** has been elected first vice-president of **American Brakeblok Division** of the **American Brake Shoe Co.** . . . **Myron W. Krueger** has been elected treasurer and **Howard P. Maxton** has been elected secretary of the **Raymond Concrete Pile Co.** . . . **Joseph J. Hite** has become assistant chief engineer of the **American Hoist & Derrick Co.** . . . **Henry Horandt** is now assistant to the vice-president and Pacific Coast manager for the **Neptune Meter Co.** . . . **W. D. Garwood,** production superintendent at the Repauno plant of the

(Continued on page 168)

ALL STEEL HAND HOIST
SEATTLE, U.S.A.
TRADE MARK REGISTERED
HOISTS
Write, wire or phone for complete information on models, prices and optional equipment.
THE STRONGEST GEARED POWER FOR ITS WEIGHT IN THE WORLD
BEEBE HOISTS ARE MORE THAN STRONG ENOUGH TO DO THE JOB!
COMPACT! POWERFUL! SAFE! Only eight parts, all of high-grade electric steel: machined and assembled without keys or set screws. No amount of man power will ever break a Beebe Hoist.
"IN THIS RUGGED STRENGTH LIES SAFETY"
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How to estimate construction costs — *quickly!* — *accurately!*

Revised 2nd Edition

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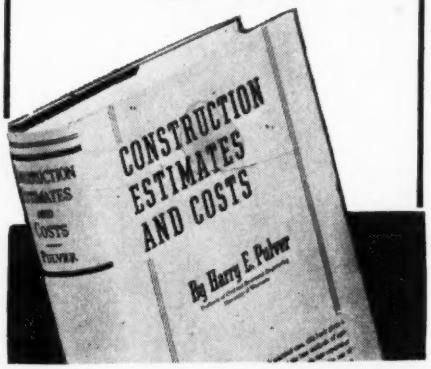

Meets all estimating problems with complete data and modern methods. A valuable tool for the contractor, architect and engineer.

CONSTRUCTION ESTIMATES and COSTS

By H. E. PULVER

Civil and Structural Engineer

653 *pages, scores of tables and diagrams,* $6.00

Thorough, systematic presentation

The book gives step-by-step instructions for estimating construction work of all kinds, including excavations, all parts of buildings, concrete, structural steel, and material transportation, profit, overhead, etc. These combined with useful tables, diagrams and illustrative estimates, make this a complete manual of estimating for the contractor and engineer.

All these practical helps

Estimating by simple arithmetical methods—covers all steps: investigation, approximate estimate, complete detailed estimate—includes such elements as plumbing, waterproofing, electrical, heating and air conditioning—many illustrative, worked-out estimates of typical jobs—now fully revised in line with upward trend of wages and prices—a working guide for the beginner—a key to safer bids, better profits for all estimators.

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Send me Pulver's CONSTRUCTION ESTIMATES AND COSTS for 10 days' examination on approval. In 10 days I will remit $6.00 plus few cents postage, or return book postpaid. (Postage paid on cash orders.)

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A SLOGAN

our customers gave us

"When you think wire rope . . . think Bethlehem." We've been saying that for a long time—but many users beat us to the punch. They were "thinking Bethlehem" long before we ever used that slogan.

Some of our customers . . . who started with small trial orders . . . are now using thousands of feet annually. There's no mystery about it. Highest-quality product, careful attention to customer needs—that's the answer.

No matter what type of wire rope you want, Bethlehem makes it. You cannot buy finer ropes anywhere. You cannot get a better, more friendly kind of field service. That's why we so often hear those welcome words, "The rope on this job is 100 per cent Bethlehem."

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL
Not how much, but how well...
BETHLEHEM WIRE ROPE
is carefully made by craftsmen of long experience. Quality is never sacrificed for quantity production.
BETHLEHEM
WIRE ROPE

When you think WIRE ROPE . . . think BETHLEHEM

(Continued from page 166)

DuPont Co. has been named production manager of the Special Products and Black Powder Section.

NAME CHANGES — Coast Equipment Co. of San Francisco has become a division of the **Nosman Equipment Co.,** a California corporation. . . . **Phoenix Bridge Co.** of Phoenixville, Pa., has been succeeded by the **Phoenix Bridge Corp.** . . . **Strand Building Products Co.** of Detroit was recently bought in its entirety by the **Detroit Steel Products Co.** of the same city. . . . **Nichols Wire & Steel Co.** of Davenport, Iowa, has changed its name to **Nichols Wire & Aluminum Co.** . . . **American Structural Products Co.,** Toledo, Ohio, recently was incorporated to conduct the building materials business of the **Owens-Illinois Glass Co.** . . . A change in name to the **Zonolite Co.** has been announced by the organization formerly known as **Universal Zonolite Insulation Co.**

PLANT EXPANSION — Western Electric Co. recently occupied a new warehouse building at Emeryville, Calif., built at a cost of only $3.09 per sq.ft. and completed within 53 working days. The 120x180-ft. build-

TRAFFIC MUST GO ON

THE MODEL "E" SPREADER PROVIDES DRIVING SAFETY

AT A MOMENT'S NOTICE the Highway Model "E" starts saving lives by spreading a protective coat of sand or cinders or other material on icy streets, highways, airport runways, etc. This one-man unit skid-proofs a 2 or 4 lane highway in one operation.

CHECK THESE POINTS OF SUPERIORITY

- Extra large distributor disc uniformly distributes material at all speeds.
- Spreads material on highway where needed. None wasted on shoulders.
- Spreads to right or left or to both sides while truck is operating in forward or reverse.
- Ball bearing gear boxes, oil tight, dust and water proof.
- Self unloading 24" wide conveyor assures steady material flow.
- Hopper sides hinged for easier hand loading.
- All controls operated from cab of truck.
- With optional clutch assembly spread may be started or stopped when truck is in motion.

● THE HIGHWAY MODEL "E", with adjustable baffle which directs the spread, saves time and material. Truck travels in safety because material is also cast ahead of the rear wheels of truck for traction and low to prevent interference with traffic. Material will not freeze to the sides of the sturdy wood hopper. Entire framework is made of steel, electrically welded. In sizes to fit any truck chassis. Widely used by highway departments and cities. Act now, bad weather won't wait. Write today for complete information.

***Versatile**—In the summer the Highway Model "E" spreads calcium chloride for dust control, sand or chips for seal coating over newly laid oil and aggregate for general road maintenance. It works the year around.*

SOLD AND SERVICED BY LEADING CONSTRUCTION MACHINERY DEALERS THROUGHOUT THE UNITED STATES, CANADA AND FOREIGN COUNTRIES

HIGHWAY EQUIPMENT COMPANY, INC.

602 D Avenue N. W. **Cedar Rapids, Iowa**

MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS

THEY SPELL
"Real Safety"
EMBURY
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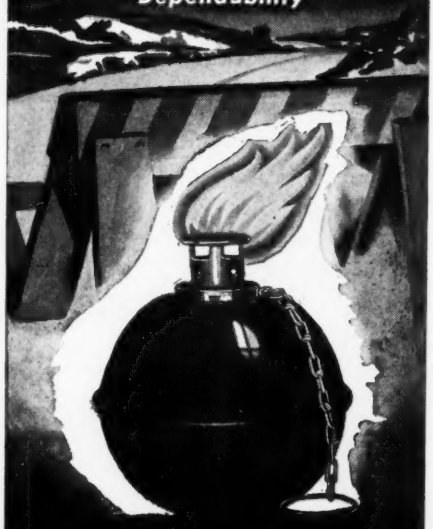
HIGHWAY TORCHES
Lowest Cost for Highest Dependability



Order through Your Jobber
EMBURY MFG. CO., WARSAW, N. Y.

ing was built by the Building Division of the Vinnell Co., Inc. . . . New buildings in Dallas and Houston, Tex., have just been occupied by **U. S. Mengel-Plywood, Inc.,** jointly owned by the Mengel Co. and the **U. S. Plywood Corp.** . . . **Taylor-Colquitt Co.** is now equipping two of the four cylinders at its Spartanburg, S. C. plant to handle poles, ties, piles and bridge timbers to improve operations and capacity.

PERSONALITIES—With the closing of its Harrisburg, Pa., branch office, **Galion Iron Works & Mfg. Co.** has announced retirement of **R. E. Forsythe,** branch manager, after 34 years with the company. . . . **Harry F. Gracey,** training director in charge of management development for **SKF Industries, Inc.,** has been elected president of the Pennsylvania Society of Training Directors. . . . **J. S. Young,** president of the **Lehigh-Portland Cement Co.,** recently was re-elected a member of the National Industrial Conference Board. . . . **William H. Kershaw,** assistant general sales manager of the **Texas Co.,** retired recently after 37 years with the company. . . . **Y. T. Leftwich,** western representative for the **Galion Iron Works & Mfg. Co.,** will retire from active service next spring.

PREHY GROUTERS—

WEBER SYSTEM

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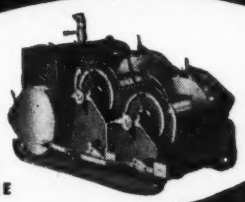

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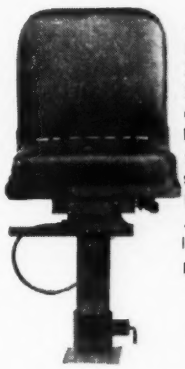

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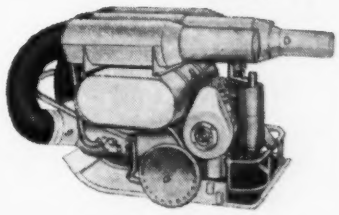

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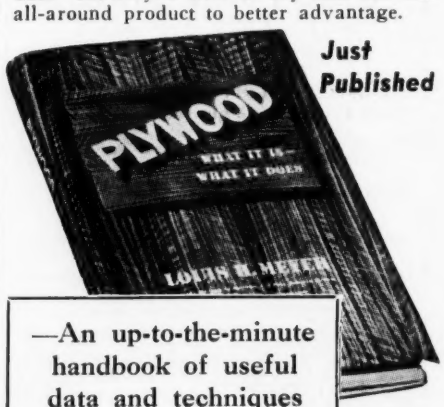

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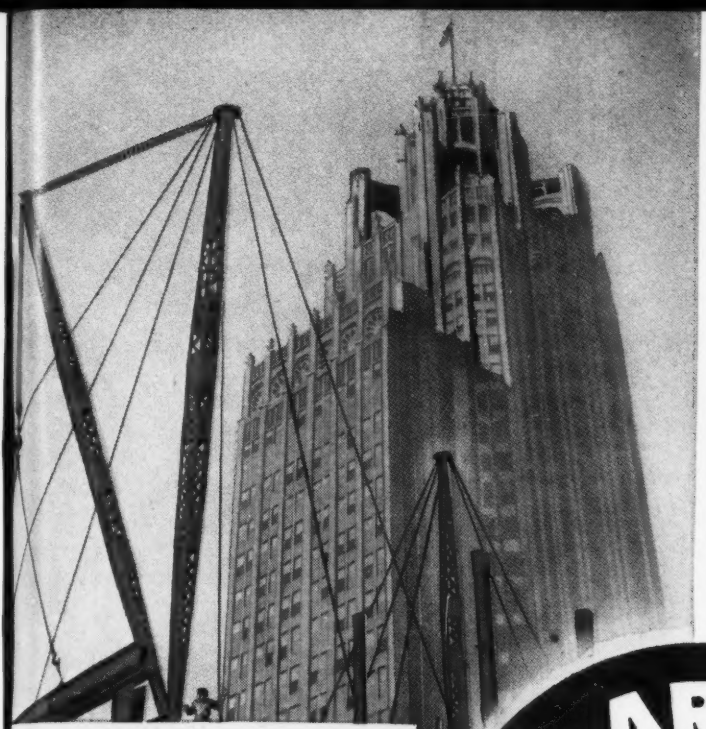

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